Vocational printing

Ralph Weiss Polk

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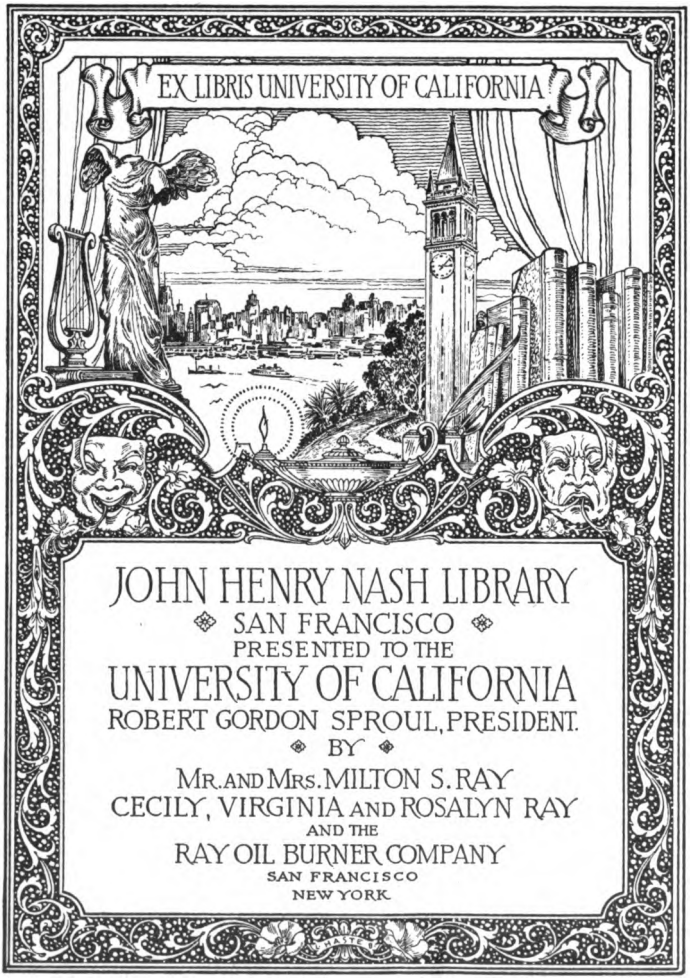

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VOCATIONAL PRINTING

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VOCATIONAL PRINTING

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PREFACE

This treatise on Vocational Printing is a selected and systematic compilation of the fundamental principles and essential details of the art of printing which are indispensable to a well-rounded course and are calculated to serve as a practical foundation for the printing vocation.

The material, exercises and discussions included in this text have been evolved and selected after long and successful experimentation in high schools and vocational schools. No attempt is made to present anything entirely new. The manual is intended primarily for the use of apprentices and students in continuation classes in connection with the practical work of the shops. Printing ranks fifth among the industries of America and thousands of persons are employed in its various branches. Moreover, there is an increasing demand in other industries for young people who have a practical knowledge of the fundamentals of printing. Therefore, it is confidently believed that many persons who have only an incidental or indirect interest in the subject of printing will find this treatise eminently useful as a hand-book.

As a text, this work covers the essential features of a five-year apprenticeship course and is sufficient, in the public schools, for two years work, of at least two periods a day, each section containing material for one semester. It may be used as a three-year course with the addition of other practical exercises and projects.

There are excellent books on the market which discuss in detail special phases of the printing industry. Representative ones are referred to in

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the text and bibliography. These should be given a place in the reference library, and students should be encouraged to become familiar with them. Printing journals, also, especially *The Inland Printer*, *The American Printer*, and *The Printing Art*, should be available to all students of printing.

As far as possible, the encouragement of individual tastes in the practical work of the shop, the reading of books on printing and the allied trades, the visiting of plants, and the collecting of printing specimens, is recommended that the youth of today may be well prepared to continue the progress of "the art preservative."

RALPH W. POLK

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PART I

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CHAPTER I

History of the Development

Printing has been appropriately designated, by early men of letters, as "the art preservative." After centuries of search for a medium through which men might preserve and perpetuate the knowledge they had acquired, and promulgate the history of their achievements, it is not surprising that the invention of printing was readily welcomed, and that the art was known by this name.

Before the advent of printing we find that many methods were devised for the preservation of knowledge. The ancient Chaldeans made up large libraries, consisting of thousands of tablets of baked clay, on which were impressed the characters of their language. The types, or punches, used to impress the characters on these tablets were made of copper, and were mounted on ivory handles. They were applied to the clay separately by hand.

In the eleventh century, the Chinese (who had invented paper much earlier) began to use movable types made of pottery, in all probability in a manner similar to that employed by the Chaldeans. This practice spread into other oriental countries, and was perfected into a skilled art by the Koreans and Japanese.

Probably the earliest method of printing in Europe was that of stamping sheets with carved blocks of wood, which method began early in the fifteenth century. At first, only crude pictures were carved, but as explanatory lines were found necessary, these were added, and this led finally to full pages of reading matter.

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Nearly all the books of this early period were written by scribes. Many of them were very elaborately finished, with large colored and illuminated initials, ornamental borders and illustrations. The style of lettering was somewhat like that of our Gothic or text types of today, although more or less imperfectly fashioned. Because of this tedious method of making books the expense of them was so great that only the rich could own them. Very few people could even read.

THE USE OF MOVABLE TYPES

It is almost universally conceded that Johann Gutenburg, about the middle of the fifteenth century, invented movable metal types for printing. In 1456 he used the types he had cast to print his first book, known as the "Bible of 42 Lines," so-called because it was printed forty-two lines to a page. This book of over 1300 pages was printed on a crude press, which was laboriously operated by hand. Gutenburg followed closely the style of lettering of the scribes in cutting his first types. The style of the text letter, shown in Fig. 1, is perhaps our nearest approach to the type with which Gutenburg printed his first books.

Fig. 1

With the invention of printing, there began at once a great dissemination of knowledge, especially among the common people, and the power of printing as an agent of civilization and progress was soon recognized. Many printers were to be found shortly after the time of Gutenburg and the art of printing spread rapidly in all the countries of western and southern Europe.

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The first printers to reach Rome were two craftsmen, Pannartz and Sweynheym. These men set up a printing establishment in the monastery of

ANTIQUI UNIVERSAM NATURAM
SUB PERSONAS PANIS DILIGENTI
ERAT SIMILES MAGNUM DOMUM

Fig. 2.—Early Roman Lettering.

Subiaco, near Rome, in 1464. At first they printed with Gothic types which were being used in northern Europe, but finding the Italians accustomed to manuscripts written in plainer lettering, adapted from the style used on the Latin monuments and tablets, they cut new dies for the first font of Roman types. The style of their lettering was somewhat like the old-style Roman type shown in Fig. 2.

The first book printed in the English language was made by William Caxton, in Belgium, in 1472. Caxton went to London soon after, and was one of the pioneers of printing in England.

DATES OF THE INTRODUCTION OF PRINTING

YEAR	CITY AND COUNTRY	FIRST PRINTERS
1450	Mainz, Germany	John Gutenburg
1465	Rome, Italy	Pannartz, Sweynheym
1470	Paris, France	Ulrich Gering
1477	London, England	William Caxton
1483	Haarlem, Holland	Johannes Andriesson
1507	Edinburgh, Scotland	Androw Myllar
1540	Mexico City, Mexico	Juan Cromberger
1639	Cambridge, Mass.	Stephen Daye

Fig. 3.

Among the leading early printers of England was William Caslon, originator of the style of type which bears his name today. So perfect were his designs that practically all of his type

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styles are still in use, and the Caslon types are probably the most popular of all type series offered by type founders.

Printing was introduced into America very early in the history of the colonies, and it played a very important part in their development. It was brought to Mexico City in 1540, and to Cambridge, Massachusetts, in 1639. The first paper mill in the United States was established in Roxborough, near Philadelphia, in 1690. We have become rather familiar with the method of early American printers through the life of Benjamin Franklin and his famous autobiography. In Fig. 3, the dates of the first establishment of printing in different countries are given.

MODERN PRINTING

Great progress has taken place in the development and perfection of mechanical devices used in the art of printing since the colonial days. Rapid power presses have replaced the crude hand presses; typesetting and typecasting machines now compose the body matter on books, magazines and newspapers; types of perfect design and proportion, accurately cast in many sizes, have superseded the rough types of the early printers. Processes are now in use for the duplication of type forms, so that from one setting many plates may be had. This

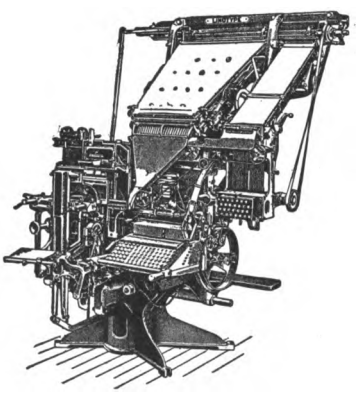

Fig. 4.—The Linotype, a composing machine.

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is done by the electrotype, stereotype, and similar methods. The art of reproducing photographs, drawings and all manner of pictorial work for printing purposes, has been developed to a remarkable degree of efficiency through the various processes of photo-engraving. Printing now ranks as the fifth great industry of the United States, employing an army of skilled workmen, and co-operating with every other occupation and profession.

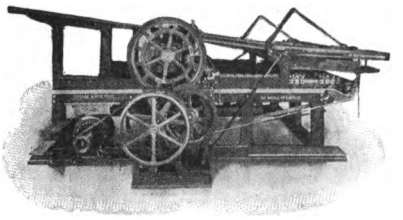

Fig. 5.—A Cylinder Press.

Modern printing is more than "the art preservative." It may also be termed "the art creative, and co-operative." It has come to be the real expression of commerce, industry and civilization. Through its use, enterprises are developed, commerce is stimulated, ambitions are realized, and society is elevated.

The value and necessity of a knowledge of good typography is becoming greater, as the use of printing increases. Men of all occupations and professions are beginning to see the advantage of a study of the fine art of printing, because of its practical commercial value.

Reference: Part One, The Art and Practice of Typography, Oswald Publishing Co., New York.

Every student should read Franklin's Autobiography. This will give him a fair understanding of earlier methods in printing, and will present many practical ideas and ideals.

Any available information concerning the lives and works of Aldus, Plantin, Jensen, Bodoni, Caxton, Caslon, Morris, and other early typographers should be studied. Such study is not only intensely interesting, but is indispensable to the real appreciation of the art of printing.

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CHAPTER II

Type

Letters are transferred to the printed page by the impression of types, which have been composed into the form and combination desired.

Four general classifications may be made of the different kinds of type: (1) foundry type, which is cast in separate characters and assembled into schemes, or fonts of different sizes; (2) type slugs, produced on the linotype and kindred type-casting machines which cast a number of letters or words on one body, known as a slug; (3) monotype, or the class of type cast for the individual job by private casting machines, in connection with a keyboard machine on which the composition is first "set," or transferred to the operating ribbon which controls the matrix plate; (4) wood type, used in large poster work and in forms where large, coarse letters are desired. These letters are made from close-grained wood, usually maple or pear, and especially treated to prevent warping and cracking.

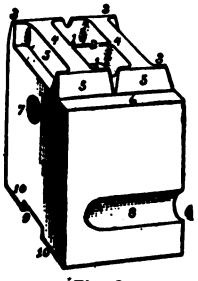

Fig. 6.

1—Counter
2—Light Element
3—Serif
4—Heavy Element
5—Neck
6—Shoulder
7—Pin Mark
8—Nick
9—Groove
10—Feet

Foundry type is made from an alloy of lead, antimony and tin. In some makes, a small per cent of copper, and sometimes nickel, is added. The uniform height of all kinds of type, in America, is .918, or approximately 11/12 of an inch.

Fig. 6 shows the different parts of a type. The bulk of a type is called the body. The flat printing surface of the letter is called the face. The pro-

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jection of the body below the face of the letter is the shoulder. The horizontal lines at the top or bottom of the elements of the letter are known as the serifs of the letter. The blank spaces between elements of the letter form the counter. The grooves in front of the body are the nicks. The founders' mark, or pin mark, will be found on one side of the body. At the middle of the bottom of the type is the groove made by trimming the type after it has been molded, and the two smooth portions of the bottom surface, on which the type stands, are known as the feet.

The kern is that part of the face which, on a few letters, projects beyond the body. In some fonts the lower-case letters f and j are kerned at the curved extremities of these letters. Italic fonts often contain kerned letters.

Foundry type is put up in fonts, or outfits of one size and style. A font is a complete collection, of one size, with a proper apportionment of each character, for use in printing. Job or display fonts of type contain all the capital letters, lower-case letters, figures and punctuation marks. Weight, or body fonts, contain these, and small capitals, dashes, reference marks, commercial

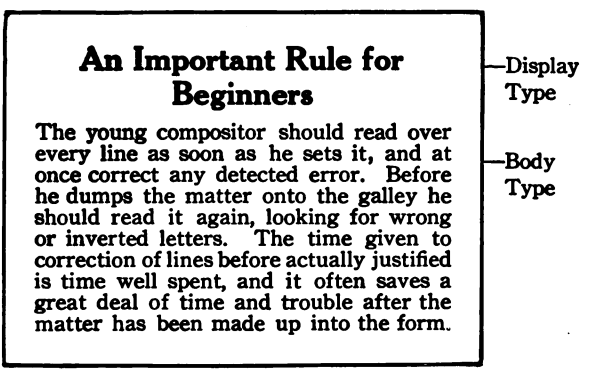

Fig. 7

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Old Style	*Modern Face*
A a	A a
B b	B b
C c	C c
D d	D d
E e	E e
F f	F f
G g	G g
H h	H h
I i	I i
J j	J j
K k	K k
L l	L l
M m	M m
N n	N n
O o	O o
P p	P p
Q q	Q q
R r	R r
S s	S s
T t	T t
U u	U u
V v	V v
W w	W w
X x	X x
Y y	Y y
Z z	Z z

Fig. 9

signs and fractions, in addition. A collection of several sizes of any one style of letter is known as a series.

Plain type in the smaller sizes, used for the composition of body matter of book pages, circulars, and advertisements, is known as body type. Heavier faced type, of more pronounced design, used for headlines, open display and similar purposes, is known as display type. The accompanying reproduction (Fig. 7) shows the use of display and body type.

Type is classed in respect to width of letter, as condensed, regular and extended. Specimens of condensed and extended types are shown below.

This is a Condensed Type

EXTENDED

Fig. 8.

The roman form of type is subdivided into two classes, old-style and modern-face. Many varieties of each style are made; in some of them the distinctive peculiarities are not easily detected. In Fig. 9, the contrasted forms of each are shown.

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In old-style type, the light elements are short and heavy; the heavy elements long. The serifs are short, angular, and stubby. Smoothness in lines and curves is not attempted, and the general effect is that approximating free-hand design. In body composition, old-style is more legible, and pleasing to the eye, than is modern-face type. Most old-style types of today are in reality "modernized old-style."

Modern-face type is more precise and symmetrical. Its light elements and serifs are longer and sharper. It is a more formal letter, but is not so distinct as the old-style.

SUGGESTIONS FOR PRACTICAL SHOPWORK

In connection with the general study of types and type faces, a careful examination of the Type Specimen Books of the American Type Founders Company, Barnhart Bros. & Spindler, and those of other foundries will be quite helpful. First, look over the specimens of body type; compare those listed as old-style with the modern-face types, and find their common differences. Then turn to the showing of display types and study their characteristics.

It will be helpful to select pieces of printed matter containing display and body type, and to study the type styles found therein. Ascertain whether the types are old-style or modern-face. Then study all the type series in the school plant, noting carefully the differences in the faces, nicks, etc.

Reference: Chap. I, Processes of Type-Making; Chap. V, Styles of Type; Plain Printing Types—DeVinne, Oswald Publishing Co., New York.

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CHAPTER III

Printers' System of Measure

The Point System is the universal standard of measurement for all composing material throughout America, and a number of other countries. The unit of the Point System is the Point, which is approximately one seventy-second of an inch. One inch is divided into six equal parts, called picas, and these in turn are divided into two parts, called nonpareils. The Standard Printers' Measure, accordingly, is as follows:

6 points	equal	1	nonpareil (non per el')
2 nonpareils	equal	1	pica (pi' ca)
6 picas	equal	1	inch
72 points	equal	1	inch

The rule used for measuring lengths in printing forms is called a Line Gauge, or Line Measure. It is graduated by nonpareils and picas.

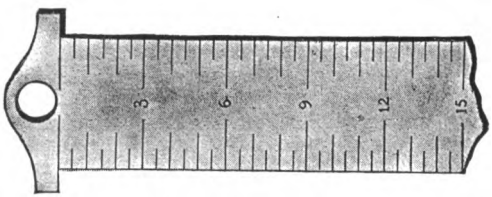

Fig. 10.—Section of a Line Gauge (slightly reduced from actual size).

Type sizes are always designated in points. A series of type consists of sizes from 6 point to 72 point, sometimes as high as 96 or 120 point. The regular sizes are as follows: 6, 8, 10, 12, 14, 18, 24, 30, 36, 42, 48, 60 and 72 Point. Other sizes, 5, 5½, 7, 9 and 11 point are very infrequently

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found in type series. 5½ point type, known as agate, is used by some periodicals for composition of classified advertising, as it takes little space. (Agate type is about fourteen lines to the inch.)

The following table gives different sizes of type, in points, size of body, size of face and the name by which the size is sometimes known.

Size	*Thickness of Body*	*Size of Face*	*Name*
6 point		Hm	Nonpareil
8 point		Hm	Brevier
10 point		Hm	Long Primer
12 point		Hm	Pica
14 point		Hm	English
18 point		Hm	Great Primer
24 point		Hm	Double Pica
36 point		Hm	Three-line Pica
48 point		Hm	Four-line Pica

Fig. 11.

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SUGGESTIONS FOR PRACTICAL SHOPWORK

In this chapter, the statement is made that "six picas equal one inch." For all ordinary purposes, this is the rule, and it should be accepted as accurate. To be absolutely correct, six pices equal .99648 of an inch. There are 72.2892 picas in a linear foot, according to the American point system, or, 72 picas are three points less than a foot. This should not confuse the student, since the variation is too small to be taken into account, except on very large forms.

Learn the printers' measure thoroughly, and apply it in practical problems until the new terms are firmly fixed in your mind. Verbal contests in answering questions involving a knowledge of the table will be found valuable in this connection. Practice the use of the line measure.

An interesting account of the history of the point system will be found in Chap. III, Plain Printing Types—DeVinne, Oswald Publishing Company, New York.

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CHAPTER IV

Leads and Slugs

Leads and slugs are strips made from lead, approximately three-fourths of an inch in height, and from one to twelve points thick, cut to multiples of nonpareils and picas in length. They are used between lines of type in composition, and for filling in around and between borders, panels and groups of matter. Ordinary leads are two points thick, but they are also made in 1, 3 and 4-point thicknesses. One-point leads are also made of brass, for lead does not wear so well when made into a very thin body.

Slugs are merely leads of greater thickness. They are made in 6-point and 12-point sizes. The 6-point slug is the ordinary one in general use.

Leads and slugs are put up in labor-saving fonts, containing graduated lengths from 4 to 25 picas. These are kept in lead-and-slug cases, as in Fig. 15. Longer measures of leads and slugs are frequently used in the composition of larger forms, and these are usually cut to order to meet the need of the plant in which they are used.

The usual sizes of leads and slugs are shown in Fig. 12.

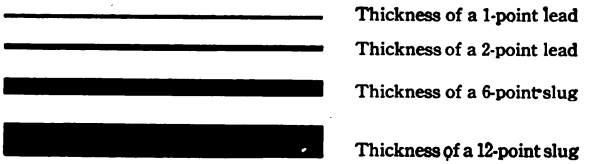

Fig. 12.

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One pound of metal type, as packed and sold by type founders, covers a space of nearly three and six-tenths square inches. To find the weight of one page of type, divide its number of square inches by the figures 3.6. A close estimate will result.

Fig. 13.—This paragraph is said to be set solid, as it does not contain leads between lines of type.

Under the American system of points, the bodies of type are clearly described by numerical names. Faces and styles are described by names of two, three or four words. The first word always designates the basic style of the type.

Fig. 14.—This paragraph is leaded with two-point leads.

It is sometimes necessary to "piece," or splice, leads and slugs because of shortage of pieces of the particular length desired. For example, if the supply of 13-em leads is exhausted, 6 and 7-em leads, 5 and 8-em leads, or 9 and 4-em leads, may be pieced to make 13 ems. When this is done, extra care must be taken in handling the piece of composition, and full measure leads or slugs must always be placed at the top and bottom of the work.

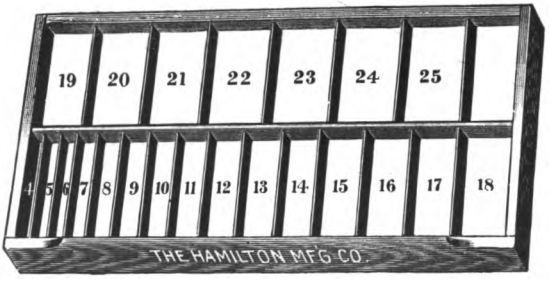

Fig. 15.—Lead-and-slug case.

When piecing leads in composition, do not allow the ends to come together at the same point in the line each time, but alternate them, for this

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makes the form more solid, and easier to lift. The following figures show the wrong and right method of piecing leads.

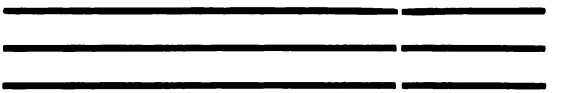

Fig. 16.—Incorrect method of piecing leads.

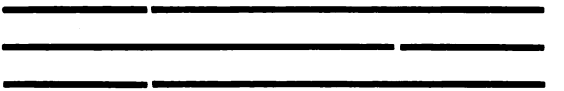

Fig. 17.—Correct method of piecing leads.

If more than one length of leads and slugs is used in a piece of composition, the simplest method for putting them away is to place them along the side of a galley, and then rearrange them according to size by picking out all of the largest size and transferring these to the head, and so on down to the smallest ones. Leads and slugs should be separated at the same time. They are then ready to be deposited in the lead-and-slug cases.

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CHAPTER V

Brass Rule

Brass rules are type-high strips of brass, rolled out to multiples of point thickness, and cut to multiples of nonpareils and picas in length. They are usually purchased in labor-saving fonts, graduated from 1 to 10 picas by nonpareil lengths, and graduated by picas in the larger sizes.

There are a great many styles of brass rules, for various purposes. The plainer styles, including plain, straight lines are most common, as well as most appropriate for general work. Fig. 18 shows a few of the usual styles of brass rule.

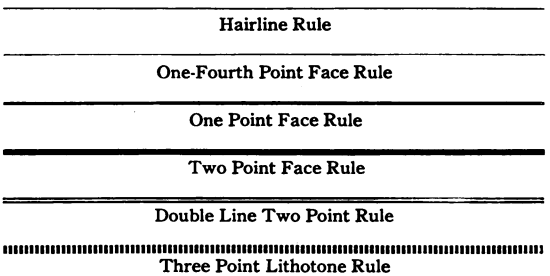

Fig. 18.

Some styles of rule are made with the face to the side of the body, leaving a non-printing shoulder at the other side, while others have the printing face in the center. It is impossible to form a rectangle or border with rule which has the face in the center without the use of mitered pieces

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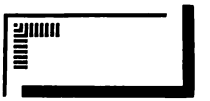
for matching (joining) the printing face at the corners. Fig. 19 shows the method of forming a rule border with the use of miters.

Method of forming corners.



Mitered corners.

Fig. 19.

With full-face rule, or with rule having the face on one side of the body, panels may be made by setting the top and bottom pieces with the face turned inside, and the side pieces with the face turned out, thus forming perfect connections of the face at the corners. This is the common method of matching corners with brass rule. Fig. 20 shows the method of making panels.

Proper positions of pieces of rule for forming panel.

Panel formed by using four pieces of brass rule.

Fig. 20.

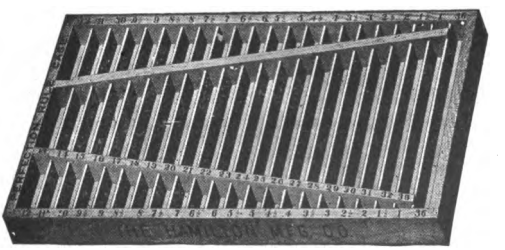


Fig. 21.—Rule case.

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CHAPTER VI

Type Cases

Although there are a number of different styles of type cases, in three standard sizes, the general scheme for the positions of letters is the same in all of them, making only one scheme to be learned, which can be applied to all cases. The two styles of cases almost universally used are the News Cases, which are used in pairs, and the California Job Case, which holds a complete font in the one case. Practically the only difference between these two styles is the fact that in the News Cases the capitals occupy the upper case, separate from the lower-case letters, and extra boxes are to be found for small caps and special characters, while the capitals occupy the right section of the California Job Case, adjoining the lower-case letters.

The capital letters are arranged in the cases almost alphabetically. The only exceptions are the letters J and U, which are placed at the last. To understand the reason for this, we must go back to the early use of movable types, when the Roman or Latin language was the only language of all printed matter. There was no character J in the Latin alphabet, but instead, the letter I was used both as consonant and vowel. There was no letter V as we have it today, although the U sound was represented by the straight or V character. This will easily be seen in the spelling of the name of the great Roman emperor, Julius Caesar. The name in the Latin alphabet was printed IVLIVS. Here you see the consonant and the vowel use of the letter I, and the U sound signified by the V character.

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There was no necessity for the type characters J and U until other European languages began to be introduced into literary work, and then the

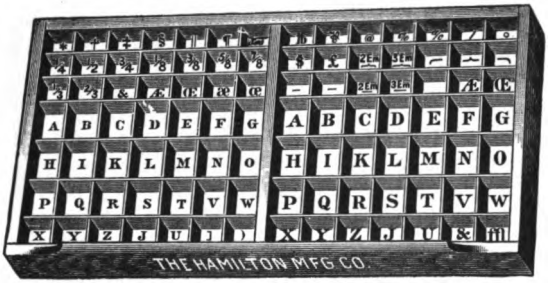

Fig. 22.—Upper News, or Cap Case.

two letters were added to the printers' font, and were placed at the end of the alphabet in the printers' case. This custom has never been changed, and is still in universal use.

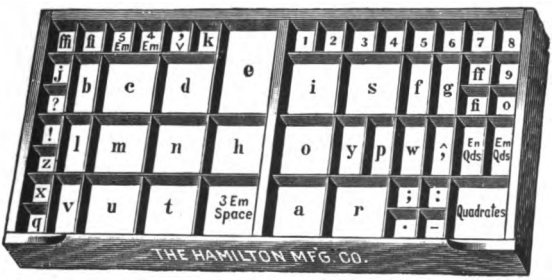

Fig. 23.—Lower news case.

In the lower case, the letters are arranged in alphabetical order only in a few instances. The scheme places the letters which are used oftener in the more convenient positions, as well as in the larger boxes. The letter e, the most used of the

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lower case characters, occupies the largest box, in a central and convenient position. The letters q, x, and z, used least, are placed in small boxes at the side, as are other characters little used.

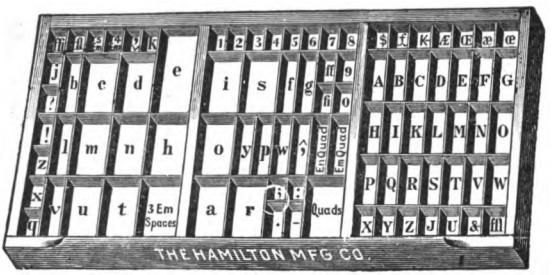

Fig. 24.—Job case.

The small capitals are to be found in the left side of the upper news case, following the same scheme as that of the capitals.

The positions of the fractions, commercial signs and other special characters are shown in the diagram of the upper news case. They are very seldom used in ordinary composition, and need not be learned until the positions of the letters are thoroughly memorized.

Other styles of cases, such as triple and quadruple cases for Gothic and card-type series, Italic cases, etc., follow the same general scheme for the relative positions of the letters.

SUGGESTIONS FOR PRACTICAL SHOPWORK

After making a careful study of the case diagrams, go to the case and find the positions of the letters. Do not rush into typesetting, but dwell particularly on the matter presented in the chapter, and practice picking out and replacing letters until thoroughly familiar with the case scheme. Do not attempt to fill out lines in the composing stick at this time.

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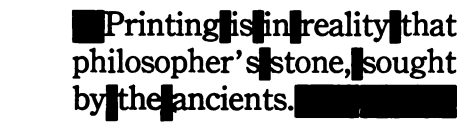
CHAPTER VII

Quads and Spaces

In the lower case diagrams in Chapter VI are shown three boxes of quads and three boxes of spaces. These are type bodies of the same point thickness of the type, and less than type-high. They are used for spacing out between words, for indentions, and wherever blank space is desired in the line of type. Fig. 25 illustrates the uses of quads and spaces in a paragraph:



An em quad is used for indention of paragraph.
3-em spaces used between words.
Quads and spaces are used to fill in lines.

Fig. 25.

The unit of spacing material is the em quad, which is always a square of the size of type with which it is used. Thus an 8-point em quad is 8x8 points, a 12-point em quad, 12x12 points, etc. For filling out large blank spaces, 2-em and 3-em quads are furnished.

The en quad is just one-half the size of the em quad. Accordingly, a 6-point en quad is 6x3 points, a 10-point en quad is 10x5 points, etc.

The 3-em space is one-third the size of the em quad. It is the standard space used between words in the lines of composition, and will be found in a large, conveniently located box in the lower case.

The smaller spaces at the top of the left side of the lower case are 4-em and 6-em spaces, which are one-fourth and one-sixth, respectively, of the

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em quad. (In some fonts the 5-em space is included in place of the 6-em space.) Hair spaces are also furnished in fonts of larger size.

For some classes of difficult composition, and for larger types, brass and copper thin spaces are sometimes used in justification of the lines, but these should not be used in ordinary body composition. These are kept in a special case.

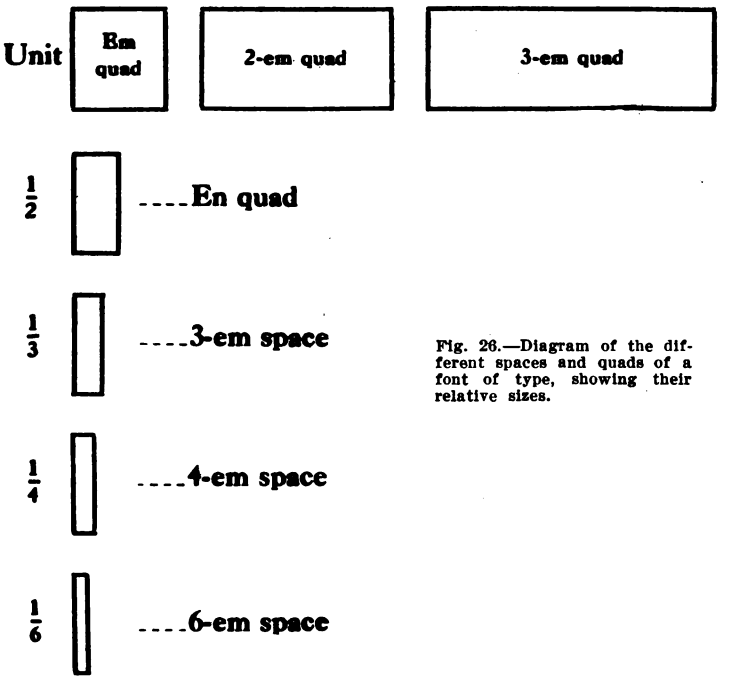

Fig. 26.—Diagram of the different spaces and quads of a font of type, showing their relative sizes.

SUGGESTIONS FOR PRACTICAL SHOPWORK

In the study of quads and spaces, it will be well to go back to the case diagrams and get the positions of the spacing material well in mind. Remember that there are six boxes of this material—three of quads in the right half of the lower case,

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and three boxes of spaces in the left half of the case. Learn the correct name for each piece—and always use that name.

A good exercise for the student will be to draw on paper or blackboard the diagram as shown in Fig. 26, omitting the fractions at the left. Then mark in the size of each piece in points, on a basis of 6 pt., 8 pt., etc. Thus, the 6 pt. em quad will be marked 6x6; the others 6x3, 6x2, 6x1½, and 6x1. All other sizes will be proportionate. It is essential that the student be drilled thoroly on the relative proportions of the quads and spaces.

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CHAPTER VIII

Spacing and Justification of Type

In the process of setting type, the composing stick is held in the left hand, with the thumb in position to steady the types as they are placed in the stick. The types are picked from the boxes of the case with the right hand, and placed in the stick, with the faces up, the characters upside down and the nick of the type body away from the compositor. Train the hand to pick the type up the way it should be placed in the stick and avoid turning several times, as this will create a false motion. The type in the composing stick will then read from left to right, the same as on the printed page, but upside down. Fig. 27 shows the proper position for holding the stick to read the type.

Fig. 27.

In ordinary paragraph composition, the first line of each paragraph should be indented one em of the type used; 3-em spaces should be used

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between the words, and one em quad should be placed between sentences. The nicks on quads and spaces may be disregarded in composition.

Every line must be set firm in the stick. It should be tight enough that the types cannot be moved from side to side, but not wedged so tightly that it is difficult to push in the spacing material. In order to bring each line to the uniform firmness required, it will be found necessary to change some of the spaces between words in many of the lines, substituting other spaces for the 3-em spaces first put in. When this is done, the spaces should be so arranged that the distances between words in a line will be as nearly uniform as possible. It is not necessary to have

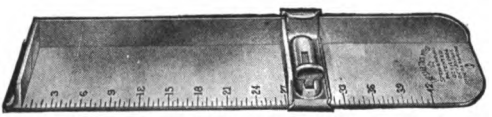

Fig. 28.—Composing stick.

them all exactly equal, but they must be so nearly uniform that the variation will not be shown in the printed copy of the piece of work.

Many rules have been made for the adjustment of spacing between words, some which are contradictory, and some, also, impractical, for obvious reasons. The following suggestions are made for the guidance of the beginner:

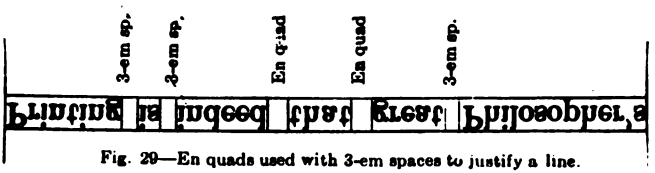

Fig. 29—En quads used with 3-em spaces to justify a line.

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Do not vary the widths of the spaces more than one-sixth of the em quad.

See that equal space is had on both sides of small words.

In choosing spaces, avoid using an excess of such spaces as are furnished in smaller quantities.

When 3-em spaces are not quite sufficient to make a line firm, substitute en quads for two or three of the 3-em spaces which are near the middle of the line, until the desired firmness is secured. See Fig. 29. Another method is to substitute combinations of 4 and 5-em, or 4 and 6-em spaces, until the line is justified.

If an en quad will make the line too tight, use a 4-em space and 6-em space instead.

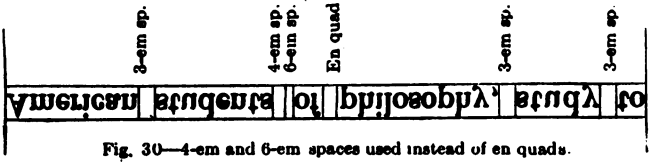

Fig. 30—4-em and 6-em spaces used instead of en quads.

If an en quad will not make the line quite tight enough, use a 3-em space and 4-em space instead.

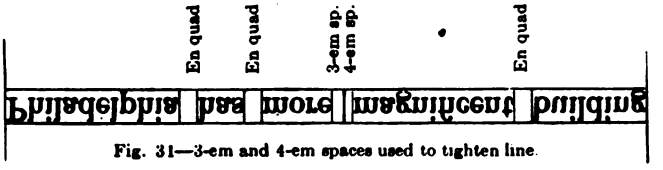

Fig. 31—3-em and 4-em spaces used to tighten line.

If en quads are used between all the words, and are insufficient, substitute two 3-em spaces in place of some of them until the line is firm, or if necessary use a 3-em space and a 4-em space in one or more of the places.

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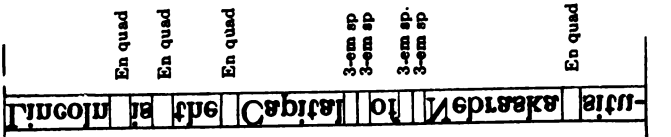

Fig. 32—Two 3-em spaces substituted for en quads, to justify line.

If carrying a word over to the next line will cause wide spacing in the line, 4-em spaces may be substituted for some of the 3-em spaces, in order to allow the word to go in the line. It is not advisable, however, to thin-space a line unless it is very necessary.

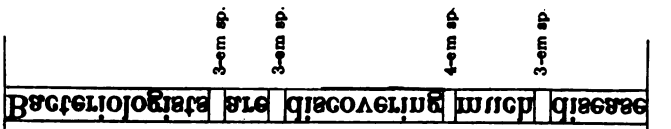

Fig. 33—4-em space substituted, to gain space in line.

Expertness in composition is acquired only by practice, and by careful attention to the small details. Emphasis should be placed on correct positions and methods, and if this is done, skill and speed will follow in due time.

SUGGESTIONS FOR PRACTICAL SHOPWORK

Before any actual composition is attempted the student should have studied very carefully the case scheme and the relative sizes of spacing material. He should begin his work in composition by setting small paragraphs of straight body matter having each criticized and corrected before starting the next. Accuracy in justification and method of spacing should be striven for rather than speed. Display matter should not be attempted until a fair amount of straight composition has been executed creditably.

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CHAPTER IX

Indentions

Indention is the setting in of a line or lines for the purpose of calling attention to a change in thought or subject, or for emphasis. Early printers used the paragraph sign for the purpose, but this custom has become obsolete, the indention serving instead. The paragraph sign is now used principally as a decorative character.

¶The wicked flee when no one pursueth. ¶But the righteous are bold as a lion. ¶A needy man that oppresseth the poor is like a sweeping rain which leaveth no food. ¶The Lord of

Fig. 34.—Illustrating early use of paragraph signs.

Ordinarily, the first line of each paragraph of body matter is indented one em of the size of type used, but in wide measures the indention is increased in proportion to the width. For eighteen pica measures and wider, it is customary to indent paragraphs one and one-half ems, and for more than twenty-five pica widths, at least two ems indention should be allowed.

A pleasing style for setting quoted matter, which is much used, is shown below. In this, the first letters of each paragraph are aligned, while the quotation marks are included as part of the indention.

Theo. L. DeVinne, in his treatise on Modern Book Composition, makes this suggestion for the composition of quoted matter:

"In all stanzas put the quotation marks in the space made by indention, so that the first letters of each line shall line vertically, as they would if the quotes were not used."

The quotation marks are not an integral part of the sentence, and when treated as such, the uniformity of indention on the page is lost.

Fig. 35.—A method of indenting quoted matter.

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The foregoing style is particularly well suited to the composition of poetry, but it can also be used in body composition. The usual treatment for quoted matter is to allow uniform indentions of both quoted and unquoted paragraphs.

Another style of indention is known as the hanging indention. In this the first line of a group is set full width, and the succeeding lines are indented. This style is employed where there are many short paragraphs or groups, each beginning with a word that should be prominent, as in dictionaries, directories, price-lists, and similar matter.

INDENTIONS—This style of composition is known as the hanging indention.

Fig. 36.

The style of indention for poetry is usually fixed by the authors. In some poems, the lines are indented alternately, while others have the same indention on the lines which rhyme. The stanzas should be centered in the column or page.

The curfew tolls the knell of parting day,
The lowing herd winds slowly o'er the lea,
The ploughman homeward plods his weary way,
And leaves the world to darkness and to me.

Build thee more stately mansions, O my soul,
As the swift seasons roll.
Leave thy low-vaulted past!
Let each new temple, nobler than the last,
Shut thee from heaven with a dome more vast,
Till thou at length art free,
Leaving thine outgrown shell by life's unresting sea!

Under the greenwood tree,
Who loves to lie with me,
And turn his merry note
Unto the sweet bird's throat,
Come hither, come hither, come hither,
Here shall he see no enemy
But winter and rough weather.

Fig. 37.—Samples of indention of poetry.

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CHAPTER X

Handling, Proofing and Distributing Type

The student of type-setting should exercise the same care in the handling of the type after it is composed, that he does in the composition of it.

Fig. 38.

To remove the type from the composing stick, he should make sure that there are slugs both at the beginning and the end of the type matter. The composing stick containing the matter to be removed should be laid down flat on the galley or stone. The type should then be carefully removed from the stick, with the thumbs at the head of the form and first fingers at the foot. This should always be done without unlocking the stick.

As soon as the type leaves the stick, it is necessary to press in against the sides of the lines with the sides of the middle fingers, also, thus holding the type firm from both sides and ends. It can be moved wherever desired while being held in this way, without any of the letters falling out. Fig. 38 shows the proper method of removing type from the stick.

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To place a piece of composition in a galley, first put the galley in a slanting position, preferably on a case or galley rest, with the head to the right and the left side of the galley at the bottom. Holding the type as is explained in the preceding paragraph, place it in the galley, head of type to head of galley. First, bring the left side of the form firmly against the left or lower side of the galley. Then push the form up against the head of the galley, making sure that it is straight and firm, and that the type is square on its feet.

If the form is to be tied up, it should be tied while in position on the galley, before removing to the stone.

To take a stone proof, ink the form uniformly with a hand roller, or brayer, and then place the sheet in position on the form. Hold the proof planer level on the sheet while obtaining the impression with the mallet. Do not strike too hard in proofing, or the planer will rebound and slur the proof and the blow may also damage the form. A little practice in taking stone proofs will teach the student more than can be explained in other ways. Proof presses are now used very generally in taking proofs, but every printer should be able to take good stone proofs.

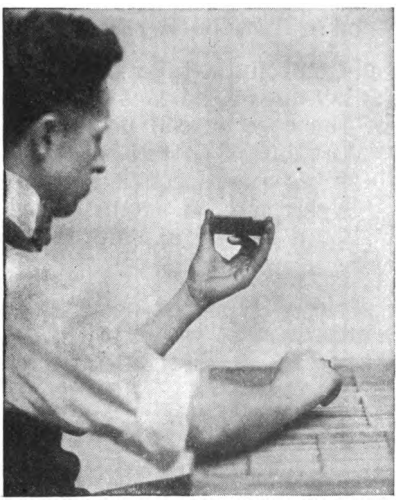

Fig. 39.

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When type is ready for distribution, it should be placed in position on a galley, if possible. From there, reasonable amounts should be taken into the hand and distributed into the cases. A few lines of type should be taken from the form and lifted to a horizontal position, being held in the same manner as when removing from the stick. The left hand should be removed from the form, and while still holding it in a horizontal position with the right hand, the form should be taken into the left, with the thumb against the left side of the lines, the middle finger against the right side, and the top or head slug supported by the index finger from beneath. This places the type in the same position to the compositor as when being composed, viz: the letters upside down, but reading from left to right, as in print. With the right hand the letters should be removed from the form, beginning at the right side of each line, and put into the proper boxes of the case. Fig. 39 illustrates the correct method of distributing type.

The beginner should not undertake distribution until he knows the lay-out of the case thoroly. At first, a diagram of the case should be before him as a guide. Special attention should be given to spaces, as the beginner is apt to confuse them in the line of type. Speed can be acquired by practice only, and it should not be attempted at the expense of accuracy.

If more than one style of type has been used in the form, it will be necessary to watch the sizes and nicks of the letters while distributing, in order to avoid mixing the fonts.

All type should be thoroly clean before being distributed.

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CHAPTER XI

Proof Reading

After the copy for a piece of printing has been set in type, a proof of the type form is taken in order that any errors that may have been made in the work may be discovered and corrected. The proof is usually held by the proofreader while the original copy is read a l o u d, slowly and carefully, by another person, and the errors are marked on the proof as they are encountered. The type form is then corrected a c c o r d i n g to the marks made on the proofsheet.

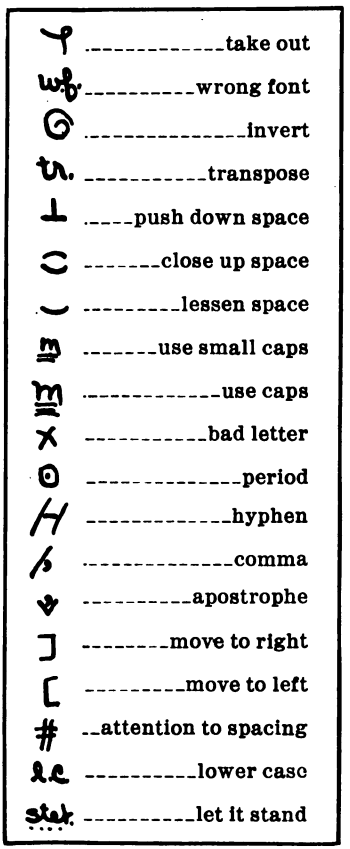

Fig. 40.

Some of the marks used by printers in the c o r r e c t i n g of forms are given on this page.

When the proofs of printing forms have been read for corrections, those containing no errors should be marked "O. K.," and signed with the name or initials of the person reading the

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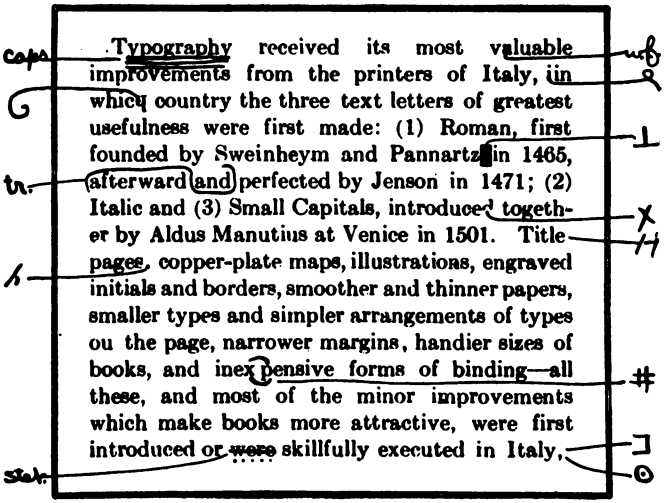

Fig. 41.—A type form which has been read for errors, with corrections marked.

proofs. Those in which errors are found and marked, should be signed "O. K. with corrections" and should also bear the signature of reader.

When proofs are submitted to the author, very careful attention should be given to the spelling of technical or foreign words, for the printer may not know when they are absolutely correct.

All copy for printing should be carefully prepared and plainly written before it is put in type form. It is a poor practice to deliver unedited copy into the hands of the printer, and expect to revise it after getting the proof. This necessitates a great deal of extra work on the part of the compositor, which the printer does not anticipate, but for which someone must pay.

It is important that printers' proofs should be read and returned promptly. Failure to do so

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TYPOGRAPHY received its most valuable improvements from the printers of Italy, in which country the three text letters of greatest usefulness were first made: (1) Roman, first founded by Sweinheym and Pannartz in 1465, and afterward perfected by Jenson in 1471; (2) Italic and (3) Small Capitals, introduced together by Aldus Manutius at Venice in 1501. Title-pages, copper-plate maps, illustrations, engraved initials and borders, smoother and thinner papers, smaller types and simpler arrangements of types on the page, narrower margins, handier sizes of books, and inexpensive forms of binding—all these, and most of the minor improvements which make books more attractive, were first introduced or were skillfully executed in Italy.

Fig. 42.—Same type form as shown in Fig. 41, with corrections as indicated.

causes delay, both to the printer and the person ordering the printed matter. In every case, the original copy should be sent back with the corrected proof even tho it must eventually be returned to the author.

SUGGESTIONS FOR PRACTICAL SHOPWORK

Every student should learn the meaning of all the marks shown in Fig. 40, and the ordinary method of marking proofs. From this time on, all proofs should be read and corrected according to this method, and only the correct markings should be used in indicating errors.

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CHAPTER XII

Style in Composition and Make-Up

In different places, and in different printing plants, the "office style" will be found to vary somewhat. Specific rules for the style of composition and make-up are not always uniform, but in general there is little difference in most points. Some of the rules which are more generally followed are given in this chapter.

DIVISION OF WORDS

One of the common rules of grammar is that no word can be divided at any place except between syllables, and that words of one syllable cannot be divided. A syllable is a portion or unit of a word which contains only one vowel sound. Vowel letters that are silent cannot be separated into additional syllables. The following words are divided to show the syllables of each:

com-mon	vague	con-tin-ued
si-lent	rest-ed	em-ployed
sep-a-rate	thronged	gen-er-al
ad-di-tion-al	end-ed	prin-ci-ple

There seems to be a diversity of opinion even among the leading authorities in regard to the proper division of words. Various schemes for divisions have been presented from time to time, but none seem to have gained a general following. Some advocate dividing words according to derivation, while others favor the plan of dividing according to pronunciation. The latter is more prevalent, and it undoubtedly is a much more simple plan.

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This chapter will not attempt to review the elements of division which are treated fully by grammarians, but merely lay down a few general rules for guidance in composition. Students who have difficulty with the division of words into syllables should consult the dictionary often, and endeavor to fix the proper divisions of troublesome words in their minds.

Typography goes a little farther than the grammar in the matter of divisions, and states that words may not be divided on the printed page between just any syllable, but that certain rules must be followed. The principal ones are stated below:

1. Do not divide words at the end of the lines unless it is quite necessary. It is much easier for the reader to follow the matter, and to carry the full thought connection, if few divisions occur in the composition. The appearance of the printed page is more pleasing, also, when few divisions have been made.

2. In ordinary cases, do not divide a short word of two syllables, such as on-ly, in-to, etc.

3. If the first or last syllable of a word consists of but one letter, that syllable cannot be separated from the rest of the word. Do not divide:

a-mong weight-y eas-y E-gypt

4. If the last syllable of the word contains only two letters, do not carry it over to the next line, alone. Either work it into the first line, or carry over with it the preceding syllable. (This rule may be disregarded when setting very narrow measures.)

Do not carry over ly as in occasional-ly, but make the division thus, occasion-ally.

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5. Compound words, or those which have been made up by combination of two separate words, should be divided between natural divisions, rather than at other places.

Word	*Right Division*	*Wrong Division*
semiannual	semi-annual	semian-nual
over-subscribe	over-subscribe	over-sub-scribe
handbindery	hand-bindery	handbind-ery

6. Words ending in able and ible will divide before the a and i, and not after: surmount-able, not surmounta-ble.

7. Do not divide proper names where it is possible for them to be kept together on the line.

8. Do not divide words at the ends of more than two consecutive lines.

OTHER RULES IN COMPOSITION

When a series of words is separated by commas, with a conjunction between the last two, the conjunction does not take the place of the comma in the last space. Such sentences should always be punctuated as in the following:

Balance, proportion, and shape harmony should be considered.

Periods and commas should always be placed inside of the quotation marks. Other punctuation marks will be placed inside if they are a part of the quoted matter, but outside of them if they serve as punctuation for the whole sentence of which the direct quotation is a part.

"Correct." "Incorrect".

Use thin spaces between the letters of titles, as in M. D., LL. D., etc.

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Use capitals for abbreviations A. M. and P. M. when they are used in cap lines; use lower-case letters when used with lower-case. Thin-space the letters a. m. and p. m.

Abbreviate titles when they precede a full name, as in Maj. Orville B. Kilmer, Dr. H. D. Morgan, Supt. F. J. Webster, etc. Set them in full when only the last name appears, as in Captain Beyer, Doctor Smith, etc.

Amounts expressed in five or more figures should have the comma, as in 18,560, 475,000. Amounts of four figures should not contain the comma unless they appear in column formation with figures of five or more digits, when the comma should be added to keep the style uniform.

Wherever the combinations of letters make it possible, use the ligatures ff, fi, fl, ffi, and ffl. The ct and st may be used in informal printing with old-style types.

RULES FOR MAKE-UP OF BOOK PAGES

All page forms should be made up to equal length, with at least a nonpareil slug across the top and bottom of each form. The blank spaces above chapter headings and at the ends of the chapters should be filled in with metal furniture.

Do not divide a paragraph of three lines or less by running a portion over to the second page, if it can be avoided.

Do not end a page with a portion of a divided word. Reset the line, if necessary.

Do not carry over only the last line of a paragraph to another page. Either make room for it on the first page, or carry over another line with it.

It is also advisable to avoid closing a page with the first line of a paragraph. Space out the page, or make room for two lines.

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The last two rules cannot be followed at all times, but they should be adhered to whenever possible.

When cuts are inserted in a page of type, such space should be left around them as will harmonize with the general plan of the page. If they are placed at the top or bottom of the page, or both, the outer margins of the faces of the cuts should align with the margins of the type matter.

Full-page cuts or tables running lengthwise on the page should read from the bottom to the top across the page, whether on the odd or even folio page. This will cause the matter to head to the outer margin on pages of even folio, and to head to the inner margin on pages of odd folio.

References: The U. T. A. Style Book, United Typothetae of America, Chicago; Manual of Style, Chicago University Press.

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CHAPTER XIII

The Imposition and Lock-Up of Forms

When a form is to be locked up for the press, it is tied up and removed from the galley to the stone. A chase (an iron or steel rim which holds the form in position in the press) is laid over it, and the form placed at about the center of the chase. Wood furniture is then placed on the four sides of the form, and pairs of quoins inserted at the top and right side. The form should be turned in such a way that will allow the longer dimension of the paper, on which it is to be printed, to be placed lengthwise on the platen of the press. Forms for narrow sheets, therefore, should be locked with the head at the left side, and forms for wide sheets should head toward the bottom. This makes the job easier to feed, and enables the press-feeder to read the matter on the draw-sheet and on the papers he feeds. If errors have been overlooked, or if any damage occurs to the form, he is able to detect it.

Two figures herewith illustrate the two common methods in locking up small forms. The first is that of so placing the wood furniture that it will protrude at each corner. This is a quick and easy method, and it insures equal pressure on all sides, without binding at any part.

Fig. 44 shows the method of building out the form to the width of the furniture above and below. In this case, the form is 15x42 picas. A piece of metal furniture, 8x15 picas, is placed at the side of the form, building it out to 50 picas.

Letterhead forms are sometimes locked toward the bottom of the chase with the head down, in

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order to secure better ink distribution from the rollers in printing.

Note the positions of the quoins in the diagrams. As the guide pins in the tympan sheet are placed at the bottom and left side, it is well to put the quoins opposite to these, so that the solid parts of the lock-up will be placed to the guides. It is important that the inner wedges of the quoins, or the pieces nearest the form, should always point toward the solid corner of the lock-

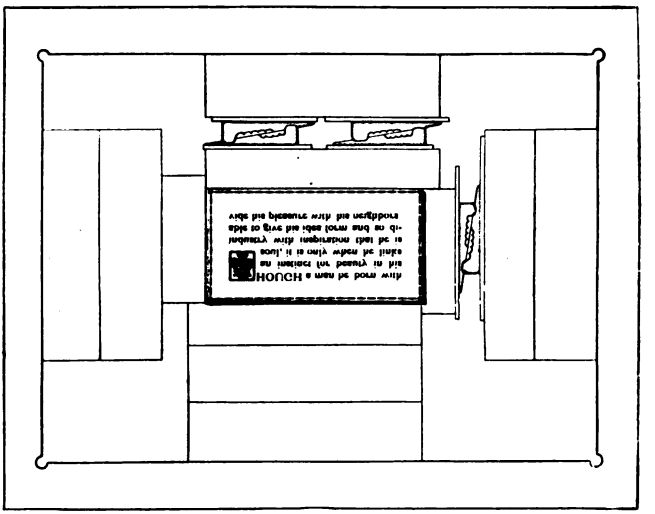

Fig. 43.

up. When the quoins are tightened, this causes the form to be driven firmly against this corner. The quoins should be placed as near the form as possible.

Reglets should be inserted on each side of the quoins to protect the furniture. If, in special cases, there is not room for reglets, cardboard should be substituted. Never place the quoins

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against the metal edge of the chase, as they are liable to slip before the press run is completed.

After the furniture and quoins have been placed properly about the form, it should be locked tight, turned up on edge, and all particles of dirt or metal brushed from the form. Then it should be replaced on the stone and unlocked. Before finally locking for the press, the quoins should be pressed together quite firmly with the fingers, and the form planed down. It is unnec-

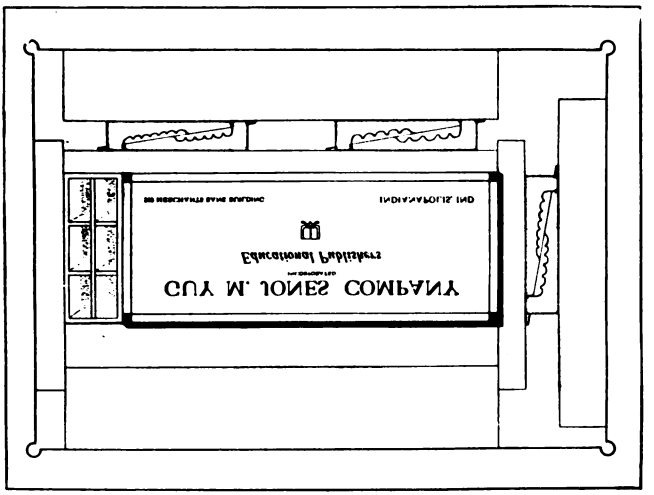

Fig. 44.

essary to strike the planer heavily for this purpose, and it should be kept in mind that the type form may be damaged very easily.

When the form is planed down, the quoins should be gradually tightened, turning each only a little at a time until all are sufficiently firm. Then lift one edge of the chase, and test the type lines. Make sure that everything is tight before sending a form to press.

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When two or more pages are to be locked together, the element of spacing and arrangement for paging is introduced. This particular phase of stone work is more commonly known as imposition, altho all the processes on the stone preparatory to the locking of forms should be included in the meaning of the term.

Two-page forms are usually printed on paper stock cut twice the size of the completed job, and then turned over and printed with the same form on the other side. The turning of the sheet causes one page to print on the back of the other, so that when the stock is cut in two, complete copies are had.

If the page forms are of equal size, the amount of space to be allowed between them can be determined by subtracting the width of the type page from the width of the finished sheet. The remainder thus found will be the correct amount of space between the two forms. This is the same as adding the inner side margins of the two pages. To test this with a rule, see that the distance from the outside margin of one form to the inside margin of the other is equal to the width of the finished sheet. If the forms are of unequal size, the distance between their centers should equal the width of the finished sheet.

With all forms of four or more pages, the matter of imposition becomes more complicated. A sheet folded once will make two leaves, or four pages. As more folds are made, for eight, sixteen, thirty-two, or more, pages, the number of pages must increase in multiples of four. After the sheets are folded and stitched, it is necessary to trim them on three sides to remove the folded, and uneven edges. Allowance must be made for trimming, and this must be added to the proper margins in the type form. The page forms, also, must be arranged in such manner that, when

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printed, the pages will assemble in the desired sequence when the sheet is folded.

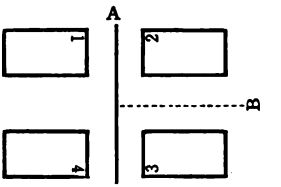

Fig. 45.

The ordinary method of imposing a four-page form is diagramed in Fig. 45. This form will be printed "work-and-turn," with pages 2 and 3 backing 1 and 4, respectively. In this figure, A indicates the place where the paper is to be cut in two, and B the fold. Another plan for a four-page form is shown in Fig. 46. Usually no extra trim would need to be allowed for a four-page sheet, unless it should be a part of a larger piece of work, in which other sections were used.

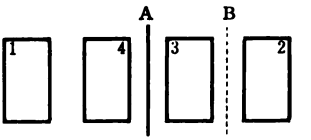

Fig. 46.

The eight-page form, one plan for which is given in Fig. 47, necessitates an extra margin for trim. The paper must be cut twice the combined size of the four leaves of the folder, plus a little extra allowance for trim at top, bottom, and outsides of the pages. Not over one-quarter inch is added for this purpose. In the diagram, A is the line of cutting, and B the first fold. Extra space must be left between heads of pages, and in the middle margin, for trimming. No additional

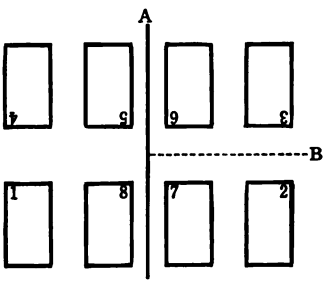

Fig. 47.

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space need be left between page forms 1 and 8, 4 and 5, 3 and 6, or 7 and 2, as these margins come at the back of the book.

Imposition of book pages, generally, must be governed by the matter of whether the sheets are to be hand-folded or machine-folded, and by the size of the stock from which the job is to be cut. The page schemes differ for hand- and machine-folding, as well as for different machines, and the compositor should be guided by a correctly folded dummy of the job, on which the page numbers (known as folios) are marked.

Reference: Pages 1 to 22, Imposition—Trezise, Inland Printer Co., Chicago.

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CHAPTER XIV

Platen Presses

Two general types of presses are used in the production of printing—cylinder and platen presses.

On a cylinder press (refer to Fig. 5, Chap. I), large sheets may be printed. The paper is fed into the press from the feedboard, above, and as it revolves on the cylinder the type form, locked on the movable press-bed below the cylinder, comes into contact with it, leaving the printed impression. The sheets are carried from the cylinder and stacked on the delivery table automatically.

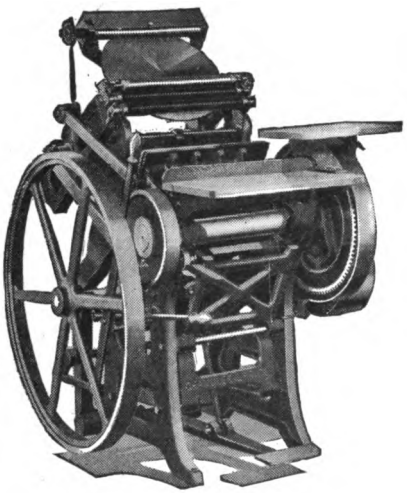

Fig. 48.—Illustration of Platen Press.

Platen presses are used for a large per cent of printed work. The leading style of platen press is shown in Fig. 48. Presses of this type are to be found in nearly every printing plant. They may be operated by treadle, or driven by power.

Fig. 49 shows a diagram of the platen press. In the detachable chase (4) the type form is

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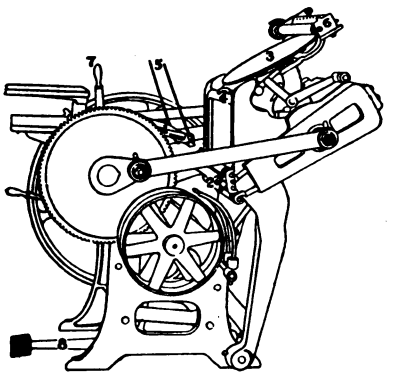
locked. The ink rollers (2) pass over the form twice between each impression, leaving an even distribution of ink on the face of the type, while they replenish their supply from the revolving ink disk (3). For long runs, or work requiring a heavy supply of ink, the fountain (6) is used to feed down small quantities of ink regularly to the rollers as they come in contact with the fountain roller. The sheets of paper to be printed on are placed in position on the platen (1) which receives the impression of the type form. The grippers (5) serve to hold the sheet in position while the impression is being taken, and to strip the sheet from the form when the platen opens, thereby preventing the sheet coming in contact with the ink rollers. At the left side of the press is the throw-off lever (7). When it it is in the normal position, the platen receives an impression of the type at every revolution of the press, but when it is pushed towards the rear of the press, the type form cannot touch the platen. This lever is used whenever it is desirable to miss an impression.



1—Platen
2—Ink Rollers
3—Ink Disk
4—Chase
5—Grippers
6—Fountain
7—Throw-off Lever
8—Treadle

Fig. 49.—Diagram of Platen Press.

To ink up a platen press for printing, put a very small quantity of printers' ink on the ink disk, and let the press run until the rollers have thoroughly distributed it. For small forms, a quantity about the size of a pea will be sufficient;

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beginners are apt to use too much ink, rather than too little. Inking up should always be done before the form is put into the press. When it is necessary to add more ink during the run, it should be put on the extreme left side of the disk, out of range of the type form, in very small quantities, so that it will not be carried to the type until it has been broken up into smaller units.

Sheets of paper to be printed are placed on the feedboard at the right side of the press. From there they are fed one at a time to the guides set in the drawsheet of the packing, on the platen, and after receiving the impression they are drawn out and placed on the larger board directly in front of the platen. In order to feed a press with the greatest ease, the student should time his movements with those of the press, performing each operation with as nearly the same precision as possible. This should be practised at first on very low speed, and the same practise pursued until this habit is acquired. If this plan is followed, there is very little chance of being injured in the press, even at the highest speed.

The ink rollers of the press are made of a soft, elastic composition which very much resembles rubber. The principal ingredient is glue, to which is added glycerine, varnish, molasses, and other substances, in small quantities. Glycerine supplies the moisture-absorbing property of the rollers. The sugar, molasses, glucose, saccharine, and like substances lend durability, suction and the power of ink distribution.

The press should never be left standing in a position that will place the rollers upon the disk, or against a form in the chase, as they will flatten, and become injured, even if left only a short time. When the press is not running, the rollers should be lowered to the bottom of the chase. Fig. 49

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shows the proper position of the press when it is not in use.

All ink should be washed off the press every day, or it will harden and become very difficult to remove. Some rapidly drying inks must be taken off as soon as the run is completed. All oily matter must be carefully wiped from the rollers and disk after washing up, for the presence of any oil or greasy substance will render good printing impossible.

SUGGESTIONS FOR PRACTICAL SHOPWORK

After a careful study of the parts of the press has been made, the student should learn how to operate it. He should be sure that all parts are properly oiled before starting the press. When only moderately used, once a week is often enough for oiling.

The form should be put into the press with the quoins at the top, and before an impression is taken, it is necessary to make sure that the grippers are so placed that they will not strike the form or come in contact with the gauges. The tympan should be reduced enough to cause a light impression of the form, and then it may be adjusted to the proper thickness. This will save unnecessary wear on the type. After an impression is made on the tympan, the positions for the guides should be marked with a pencil, and the gauge pins set as accurately as possible. After an impression is taken on stock of the proper size, the final adjustments can be made. The pins should then be tapped lightly, to hold them in place.

In feeding the press, each sheet should be placed down to the bottom guides first, then pushed over against the side guide. Speed should not be striven for until enough practice is had to insure accuracy and proper method of feeding.

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CHAPTER XV

The Use of Borders

The necessity of using borders in composition of ads, titles, posters, and, in fact, a very large per cent of all printing forms, makes this subject an important one.

A typographic border is to the type form what a frame is to a picture. It defines its borders, sets it apart from the background, unifies and

Fig. 50.—An appropriately bordered ad.

holds together the design, and greatly improves its appearance and attractiveness. And just as a frame should be selected that will harmonize with a picture and serve to enhance its beauty, a border should be selected that will be appropriate, and in keeping with the type design.

Heavy, ornamented borders are unsuitable for use with plain type matter of light tone. Heavy

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poster forms, however, need plain heavy borders to finish out the design. The necessary tone of display of each piece of composition should be studied, and type and borders should be selected which will be most consistent.

The outside frame of an ad, including the border and necessary spacing material for admitting white space between the border and the body, is called the "skeleton" of an ad. In the composition of ads, the skeleton is made up to the proper size, and the body matter is then inserted.

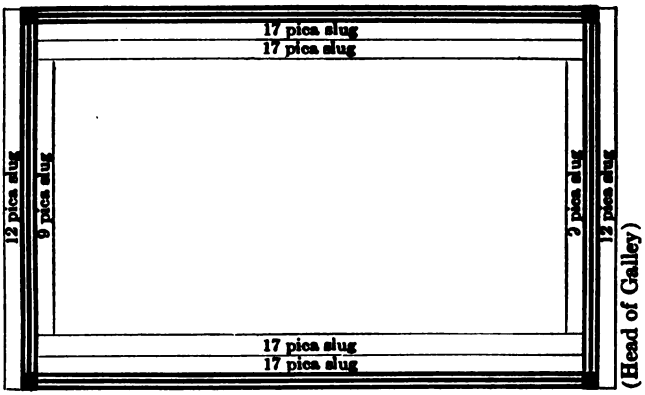

Fig. 51.—"Skeleton," or frame of an ad.

To make up a skeleton of an ad two inches wide by three inches long, using six point rule for a border, and allowing one pica white space between the border and body matter, a galley is first placed in position on the slanting surface of a case or rack, with the head to the right and the left side at the bottom. Two 12-em slugs are placed on the galley, one at the head and the other parallel with it, but about 18 ems to the left. These form the extreme top and bottom

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pieces of the skeleton. Two pieces of 12-em rule (or 11-em rules and corners) are placed parallel and just inside of the top and bottom slugs. Two pieces of 17-em rule and four 17-em slugs are then placed lengthwise in the form, as shown in Fig. 51. These are separated and held in place by 9-em slugs at top and bottom of the inside area. The material thus arranged constitutes the skeleton of the ad, the body matter for which is set the width of the open area, and inserted.

All skeletons for forms, regardless of shape, size or the amount of inner margin, should be made up in the order given above, and should always be built with the head of the ad at the head of the galley.

A great many styles of borders are made by type founders, most of them cast on bodies measured by multiples of nonpareils. A few type borders are reproduced in Fig. 52.

Fig. 52.—Type borders.

Type borders of just the proper weight and style for all designs are not always available, and often other borders can be composed that will give the desired effect. This can be done by the use of brass rules and corner pieces in suitable combinations. Some very attractive borders are made in this manner. A few such combinations are shown in Fig. 53.

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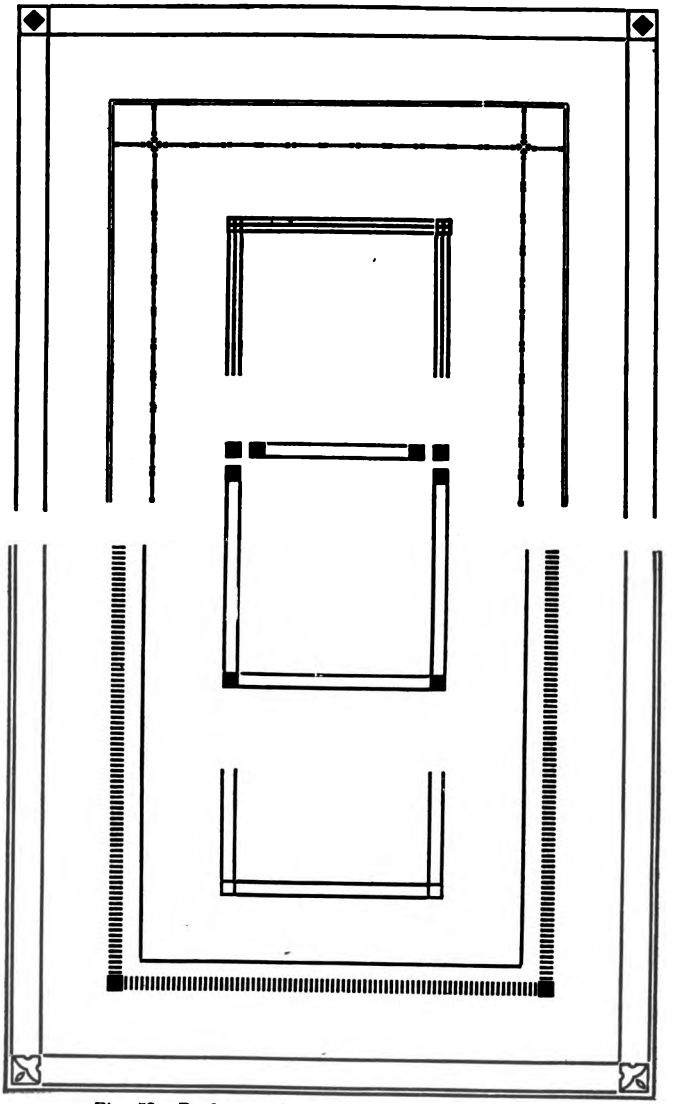

Fig. 53.—Borders made with brass rule and corners.

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SUGGESTIONS FOR PRACTICAL SHOPWORK

Study carefully the method of constructing the skeleton of a bordered form, then make up a skeleton of the same proportions as Fig. 51, using a nonpareil border. Practice the construction of skeletons of other dimensions. When you have the correct method well in mind, use a 2-pt. rule as a border, matching the corners, as shown in Fig. 20, Chap. V. Continue the exercises, using different borders, and varying dimensions, until you have learned the method thoroly.

Make up as many of the borders shown in Fig. 53 as your local shop material will permit, building them to specific dimensions. Add to this list any other suitable combinations you can devise. Take stone or press proofs of these, and preserve them for reference.

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PART II

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CHAPTER I

The Use of Lay-Outs

One of the first things to do in the production of a piece of printing is to make a preliminary sketch or plan of the design that is to be composed. This is necessary in order that an intelligent idea may be formulated, and that all parts of the composition may be appropriate, harmonious, and may bear the proper relation to each other. This plan also proves a time-saver, for often unsatisfactory features will appear in the lay-out which can be corrected very easily, but which would cause a good deal of extra work if not discovered until a proof of the type form has been obtained.

This method of making preliminary lay-outs may be compared to the work of an architect before the contractor erects a building. Both are very necessary in obtaining proper results in an orderly manner.

In many printing plants lay-out men are employed to plan all the pieces of printing before they are composed. They make sketches of the plan and arrangement to be followed, and indicate what type styles, borders and ornaments are to be used. In plants where this work would not take the entire time of a lay-out man, the head compositor usually does the designing in addition to his work at the cases.

For the purpose of making lay-outs, a special blank has been prepared and is now in general use, consisting of dotted lines forming squares one pica in size, numbered at the side and top. At the left of Fig. 54 is shown the lay-out of an

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advertisement prepared on the standard lay-out sheet. The resulting type form is shown at the right. Instructions as to size and typographical materials have been followed in the composition of this advertisement.

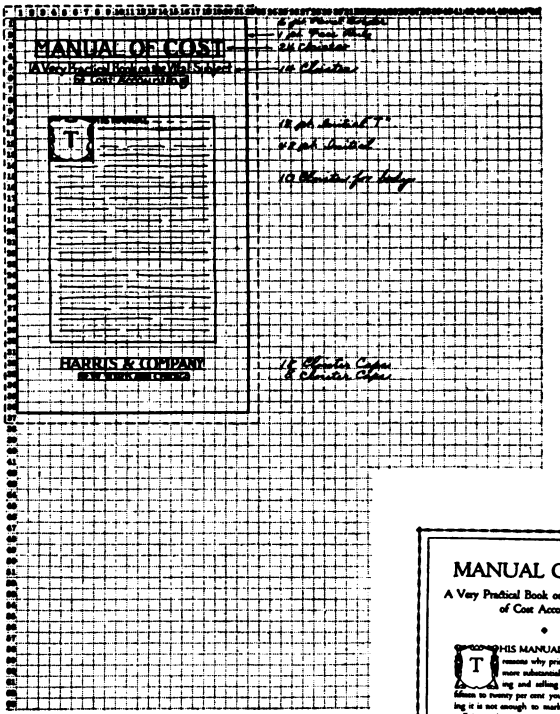

Fig. 54.

MANUAL OF COST

A Very Practical Book on the Vital Subject of Cost Accounting

THIS MANUAL gives the economic reasons why printing should carry a more substantial margin of advertising and selling cost. The present fifteen to twenty per cent you now allow for selling it is not enough to market the product in a satisfactory volume to secure a profit for the average printer. We have analyzed the statistics of the book and job printing business for the past thirty years, have compared your figures with those of other lines of manufacturing for the same period, and we know that this is so. Production, unbalanced by selling, results in the creation of higher liabilities, dead stock and eventual loss. That is what is the matter with many printing establishments today. Every printer should have a copy of this "Element of Cost," and give it special attention in all matters pertaining to cost accounting.

HARRIS & COMPANY
NEW YORK AND CHICAGO

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SUGGESTIONS FOR PRACTICAL SHOPWORK

In order to become accustomed to the use of the lay-out sheet the student should practice the making of lay-outs. At first it will be best to make lay-outs corresponding to type designs already printed. This will give practice in placing the lines properly, and in lettering. Simple original designs should follow these lay-outs of finished jobs.

This is, of course, only preliminary practice in the use of lay-outs, for they will be used for all projects that will be composed in the subsequent work of the course.

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CHAPTER II

The Principle of Balance

One of the primary elements in typographic design is that of the balance of forms. The law of balance is a simple one, but extremely important in the planning and composition of printed matter.

Separate groups or spots of printing on the page claim the attention of the reader in proportion to their relative size and intensity of color. In order, then, to balance two groups of equal size and tone on a page, we must place them equidistant from the center of attraction of the page. Fig. 55 illustrates this method.

When the groups are of unequal size, the law of inverse ratio must be applied in placing them correctly. Smaller groups will be further removed from the center of attraction, while larger ones will be placed nearer to it. This is the same principle as that of the teeter-board, and the balance scale. In Fig. 56, two masses bearing a ratio of four to one are balanced on a parallel bar. The smaller mass must be placed four times as far from the central pivot as the larger. Compare this with Fig. 57. Here are indicated two groups of matter bearing the ratio of four to one.

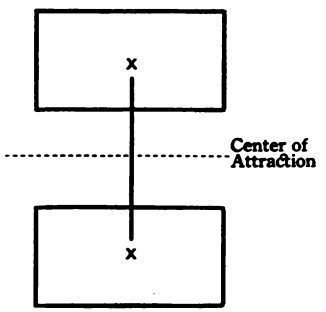

Fig. 55.—Two groups of equal value balanced.

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To properly balance these groups, the smaller one must be removed four times as far as the larger one, from the center of attraction. Groups of other proportions must be balanced according to this same method.

If three groups are used, the proper method of balancing is to find the balance of two of them, then balance these two (from their common center) with the third. The values of the first two should be added

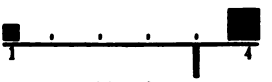

Fig. 56.

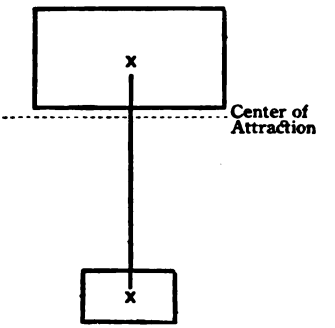

Fig. 57.—Two groups of unequal value balanced.

when balancing them with the third, to ascertain the correct ratio of distance from the balance of the page.

When groups of different tone or intensity of color are used together, the ratios of those of lighter tone will be less than denser ones, in proportion to the comparative tone or intensity.

SUGGESTIONS FOR PRACTICAL SHOPWORK

Work out with rule and pencil a number of problems in balancing measures. Construct the rectangles to definite proportionate sizes, and lay off the distances on the lines carefully with the rule. Start with problems involving two measures, then three and four measures.

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CHAPTER III

Simplicity and Order in Arrangements

In printing, as well as in other arts, the strained effort to do something original, without following definite rules of display, order and appropriateness, often results in failure.

The first object of a piece of printed matter is to be read, and to create a favorable impression. It must, therefore, be arranged in logical order, and every part of the matter must pertain in some way to the message to be grasped. The arrangement must be simple, if it is to be effective.

It is much easier to overdecorate a piece of printing than it is to get it too plain. The father of printing—Gutenburg—over four hundred years ago, printed one of the most beautiful books of the world with one set of characters. Franklin printed his publications, news, ads and all, in a few sizes of one style of type. Yet the work of these men has not been excelled. Simplicity, however, does not mean a lack of ornamentation or decorative design, but rather an orderly arrangement in which all the decorative material is intelligently chosen and consistently placed.

Simplicity in design includes also the grouping of the lines of a form into a few logical groups, instead of spreading them out over the entire page. This gives strength and forcefulness to the groups, increases their legibility, and gives greater contrast with the areas of white space. Fig. 59 shows a title page in which little effort has been made toward simplicity in the arrangement of the text matter. This same matter has been grouped and balanced on the page

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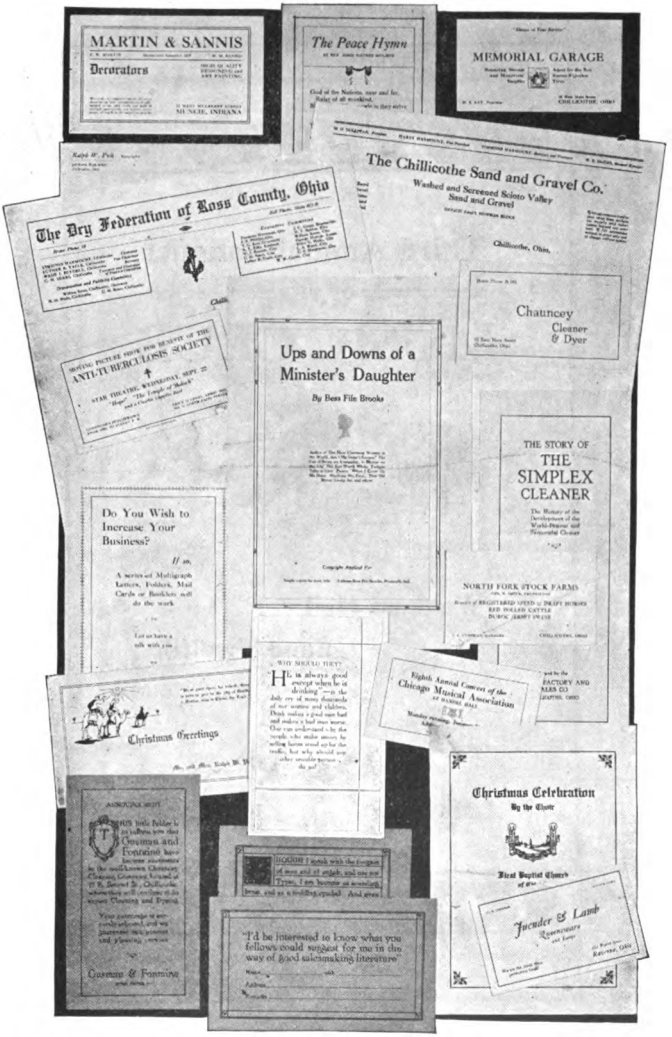

Fig. 58.—A few designs by the author, in which simplicity is apparent.

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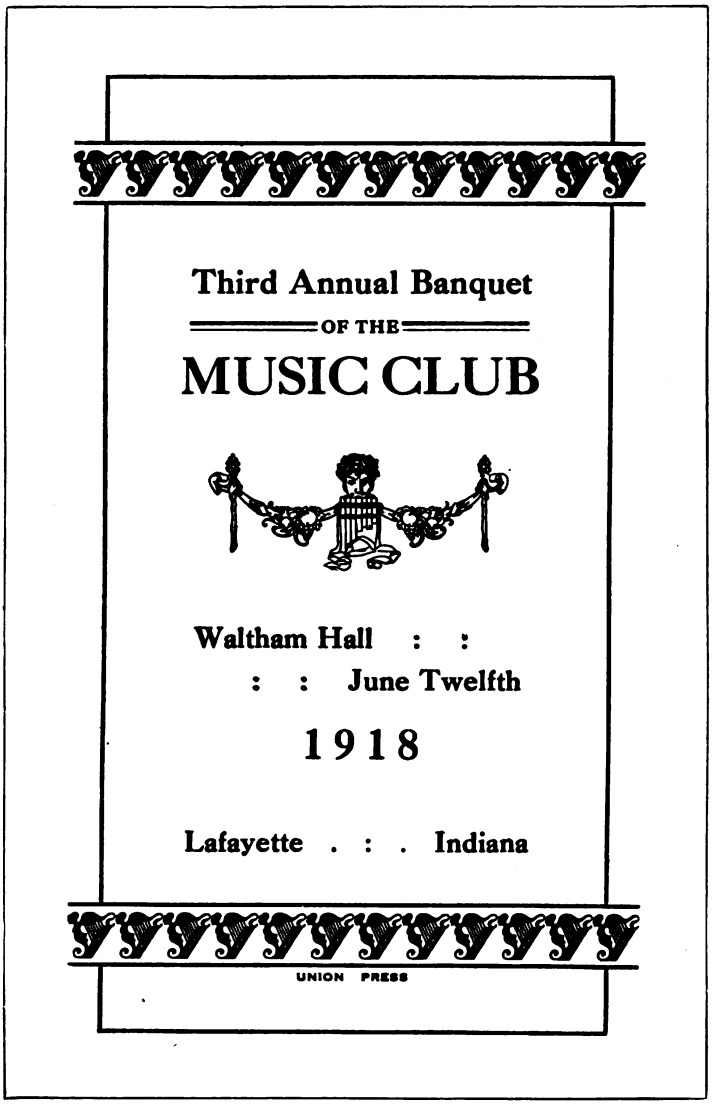

Fig. 59.—Title-page in which ornamentation has been given first consideration, to the detriment of the clearness of the copy.

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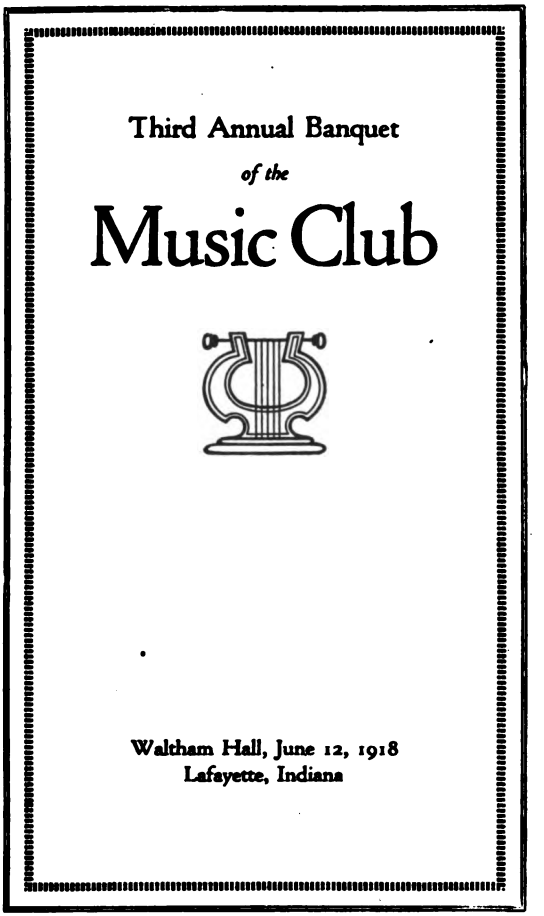

Fig. 60.—A resetting of the title-page in Fig. 59, showing the superiority of simplicity in design.

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as illustrated in Fig. 60. A comparison of the two figures shows the superiority of the simpler arrangement.

The order of display for a piece of printing can usually be worked out by using judgment as to what it should be. Lines of first importance should be given a prominent place and adequate display, while relatively unimportant lines should be subordinated. The use of the preliminary lay-out, or rough sketch, will assist materially in determining the order of display.

SUGGESTIONS FOR PRACTICAL SHOPWORK

Select a number of pieces of printed matter that seem to be poorly designed and over-decorated, and write the wording they contain on a blank sheet of paper, with no attempt at grouping or design, adding figures representing the page sizes. Then put away the printed specimens and examine the written copies. Take lay-out sheets and arrange the matter into groups in the simplest possible form, surrounding each with lines made the size of the printed pages. Add ornamentation only after thoughtful consideration.

When you have completed these lay-outs, compare them with the original specimens, and note the improvement. If time permits, put some of your designs in type form, and study the proofs in connection with the originals.

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CHAPTER IV

Proportion

Another very important element in designing printed matter is the rule of proportion. There must be contrast and variety in the printed design in order that there may be interest, and this contrast, or inequality of parts of the form, must be according to recognized ideas of proportion. Proportion has been aptly defined as "the pleasing inequality of parts of an object."

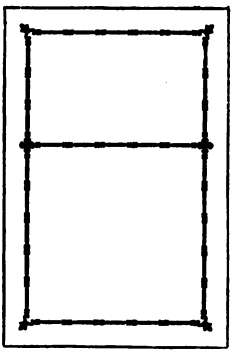

Fig. 61.

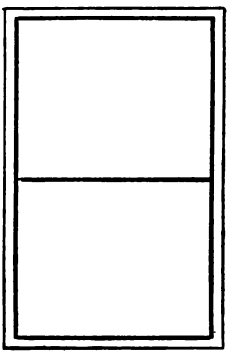

Fig. 62.

The generally recognized ratio of proportion on the printed page is that of three to five. This is illustrated in Fig. 61, in which three units of space are included in the upper panel, and five units in the lower panel. Compare this with the accompanying Fig. 62, in which the space is divided equally. In this there is no contrast or variety, and consequently no interest.

Another important reason can be given for the use of this three-to-five ratio of proportion. In

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Fig. 62 the dividing line appears to be a little below the center, altho the space is exactly equal. We will also discover that a perfect square seems to be slightly flattened. Because of this optical illusion, it is necessary for us to place a group

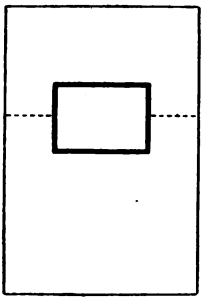

Fig. 63.

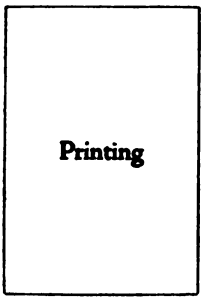

Fig. 64.

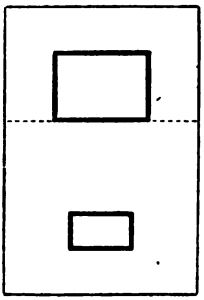

Fig. 65.

of matter above the center of a page or it will seem too low. We therefore establish the point three units from the top and five units from the bottom of the page, as the balance of the page, or the center of attraction as mentioned in Chapter II, and illustrated in Figs. 55 and 57. Type founders find it necessary to recognize this optical illusion in the designing of letters and it is for this reason that the lower parts of the characters B, E, H and S are given more space than the upper parts.

If we have one group of matter to be placed on a page, it must be located according to the three-to-five proportion, as in Fig. 63. This is much more pleasing than Fig. 64, in which the line has been centered on the page.

Where more than one group is used, the same method of balancing as explained in Chapter II should be followed, using the line dividing the page into proportions of three to five, as the

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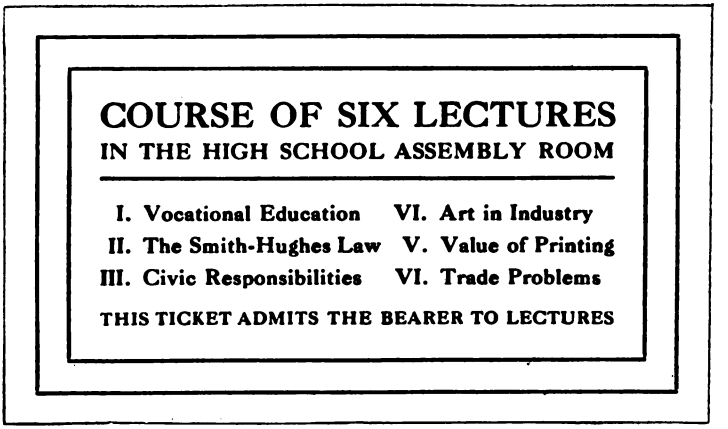

Fig. 66.—Ticket form in which the equal margins produce a monotonous effect.

center of the groups. Fig. 65 shows the proper balance of a page similar to the one in Fig. 63, but with another group added. The original group is raised in proportion to the ratio it bears the added lower group.

An out-of-center balance is one in which the type form is placed on the page at a proportion of three to five, both horizontally and vertically. This style is occasionally used on cover pages and similar work, where a small form is placed on a large page.

The element of proportion applies also to the shape of the printed page, and to margins between type forms, borders, and the edge of the paper on which they are printed.

The length of the properly shaped page is one and one-half times its width, which is a proportion of two to three. Thus a catalog page is frequently 4x6 inches, 6x9, 8x12, or the reverse, 6x4, 9x6, etc. (In every case, the first figure of the

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dimensions of a sheet should indicate its width, and the last figure its length. Thus a 6x9 sheet is long, while a 9x6 sheet is wide.) Even in the work of the early typographers and master printers we find this proportion has often been followed in bookmaking, with very pleasing results.

Of course, this shape cannot always be strictly adhered to. Some sizes of paper stock cannot be cut to advantage for books of exact proportion. Also, it is sometimes desirable to plan long, narrow booklets to fit the pocket, and other shapes for other specific reasons. Whenever possible, it is better to follow the proportion of two to three for sizes of sheets or pages.

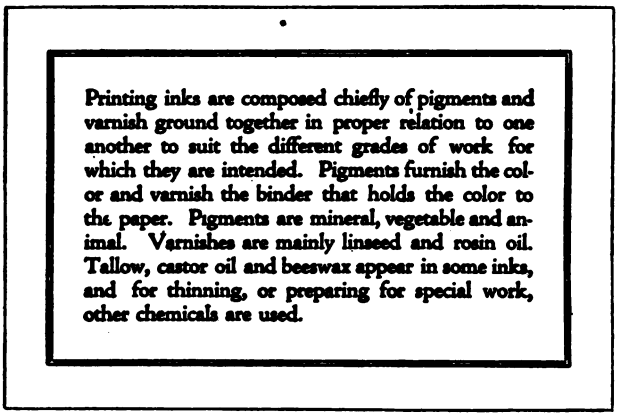

Fig. 67.—Proper proportion for margins.

This same ratio is used in determining margins of white space in printing. If a type form contains a border, the space allowed outside the border should be one and one-half times the amount of space between the type body and the border. Fig. 66 shows a ticket bordered in such a way that the white space is equally distributed. It is not nearly so pleasing as the properly proportioned margins shown in Fig. 67.

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The principle of proportion will apply in the same manner to the mounting of photographs or calendars, the framing of pictures, the placing of wall decorations, and many other things we do.

SUGGESTIONS FOR PRACTICAL SHOPWORK

Make a lay-out of a bordered title-page or cover-page, with only one group of matter, and then set up the form. Compose the skeleton first, and allow such space above and below the group as will give the proper proportion. Obtain a good proof of the form.

Add a lower group to the form, and re-apportion the spacing to retain the proportion of the whole. Compare proof of this with the one previously taken.

Work out other problems in which proportion is an element. In each case, indicate the page size, and make sure that the margins are in proper proportion.

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CHAPTER V

Shape Harmony

In order that a printed design may be artistic, the component parts must have the same general characteristics of shape. Plain, straight lines and rectangular figures will go well together. Curved and irregularly shaped figures will harmonize. In wide forms, wide groups and figures must be used. Narrow groups and condensed characters must be used in narrow forms.

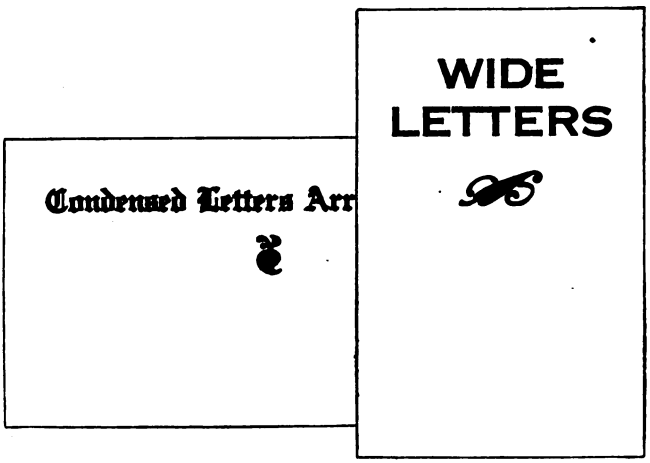

Fig. 68.—Lack of shape harmony.

Fig. 69 shows two forms, neatly composed and properly proportioned, but in each case there is a lack of shape harmony between type and border. In the next figure the borders are changed to harmonize with the type, and a very marked improvement is the result.

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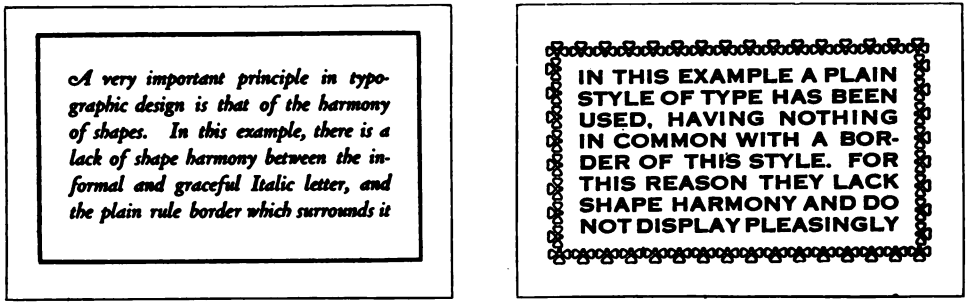

Fig. 69.—Inharmonious combinations.

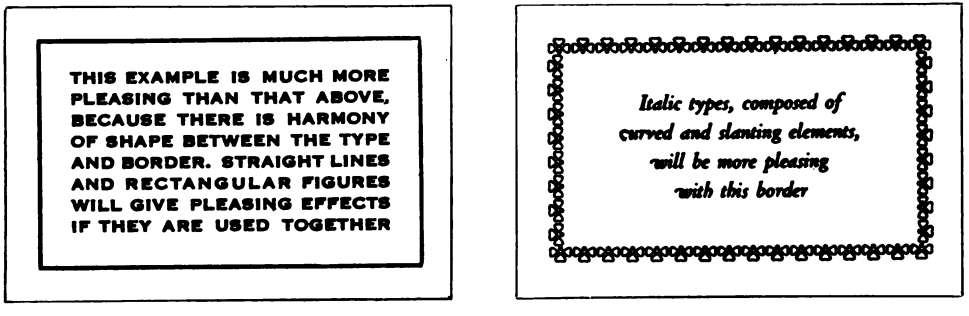

Fig. 70.—Shape harmony.

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To secure shape harmony between the style of type and the page, it is necessary to choose type of the same general proportion. In architecture, it is necessary that tall and narrow buildings contain a preponderance of vertical lines. This rule applies with equal force in the designing of forms for narrow pages. Wide types and ornaments are not suitable for long, narrow pages, neither do condensed types look well on broad pages, as Fig. 68 demonstrates. The opposite combination, producing shape harmony, appears in Fig. 71, below.

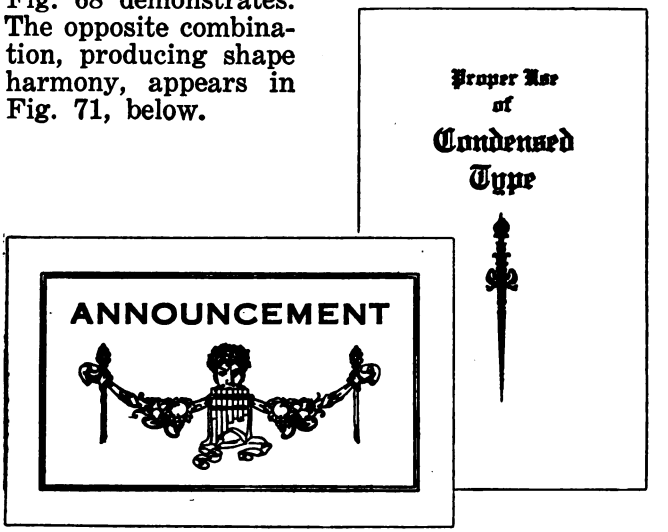

Fig. 71.—Shape harmony in type, ornament and page.

Shape harmony must be considered in the choice of type faces used together, if more than one style must be used. Types cannot be used together appropriately that have strong contrasts in shape and construction. Combinations of Old English and the so-called Gothic types are shown in Figs. 72 and 73. In the former, there is much discord because of the lack of common shape. In Fig. 73, however, the two types go well together,

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for, because of difference in size, the shapes do not make a displeasing effect.

The most satisfactory results will be found in using but one series of type in a piece of printing. This is a sure way to secure shape harmony in the

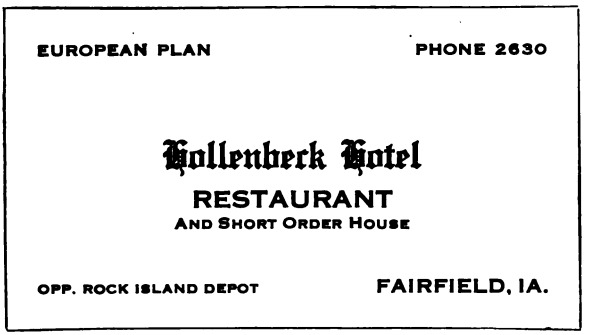

Fig. 72.—Lack of shape harmony in use of two type faces.

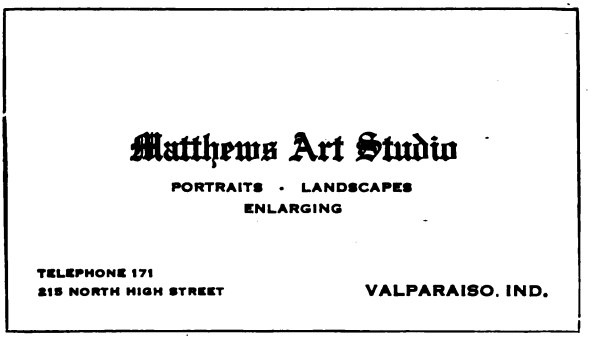

Fig. 73.—Because of the smallness of the Gothic letter, the contrast of shapes is not so noticeable.

type form, and a pleasing quality of design not to be found in the use of mixed type faces. A second style of face can sometimes be used, sparingly, for emphasis, or originality, but the safest plan is to refrain from the use of miscellaneous types in one piece of printing.

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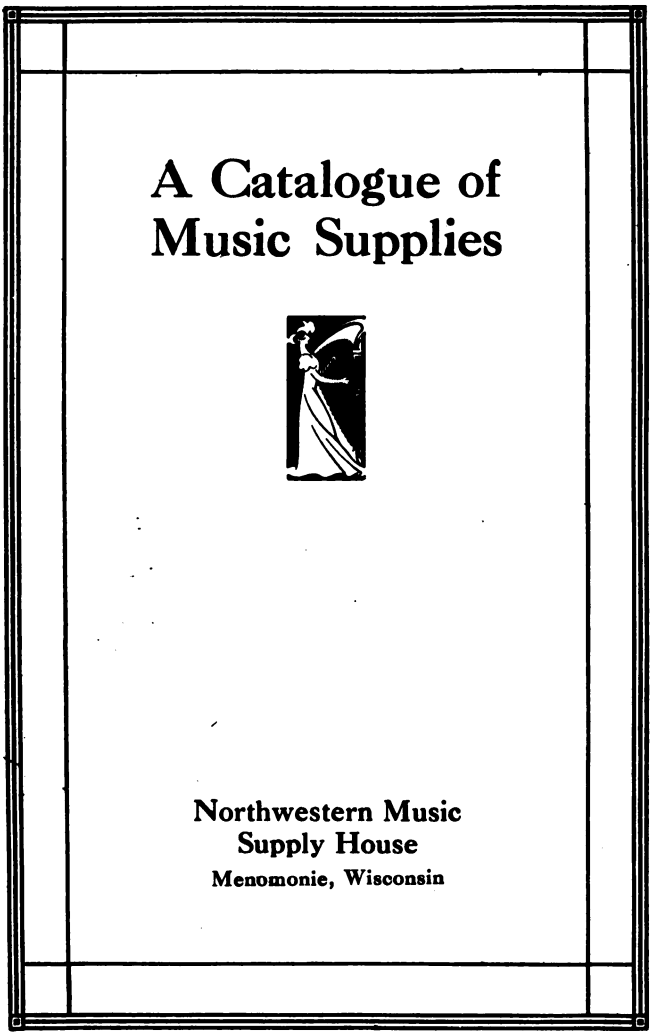

Fig. 74.—Example of shape harmony in use of border and ornament.

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Capitals and lower-case letters appear to best advantage when used separately—all capitals or all lower-case. A title page in capitals is formal and dignified in appearance, and shape harmony is had in the even lines of the letters. If a slight variation is desired, this can be gained with a sparing use of italic lower-case for subordinate lines or words. All lower-case forms are very pleasing for many uses, and are more informal and unconventional than those in all capitals. The choice of either capitals or lower-case letters for a piece of printing should be made with a consideration of the propriety of their use in that case.

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CHAPTER VI

Tone Harmony

The weight or strength of color of the printed page is called the tone of the page. Harmony of tone between the different parts of a form is one of the essentials of good printing.

Tone harmony may be secured by choosing borders, rules and ornaments, that will print the same tone as the type. Fig. 75 shows a type form surrounded by a border of lighter tone. Altho' the other requirements of good design are satisfied, this example is inharmonious because of the inequality of tone. In Fig. 76 a border of proper tone is substituted, very greatly improving the appearance of the printed design as a whole.

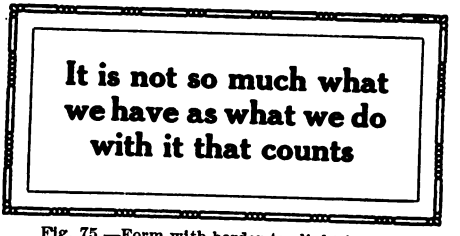

Fig. 75.—Form with border too light in tone.

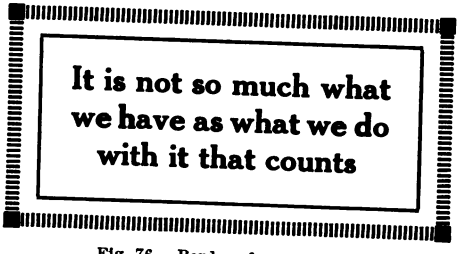

Fig. 76.—Border of proper tone.

Three examples of tone harmony, in light gray, medium and heavy tone, are reproduced in Fig. 77. In Form B, note the harmony of the border with the type. The heavier part of the border

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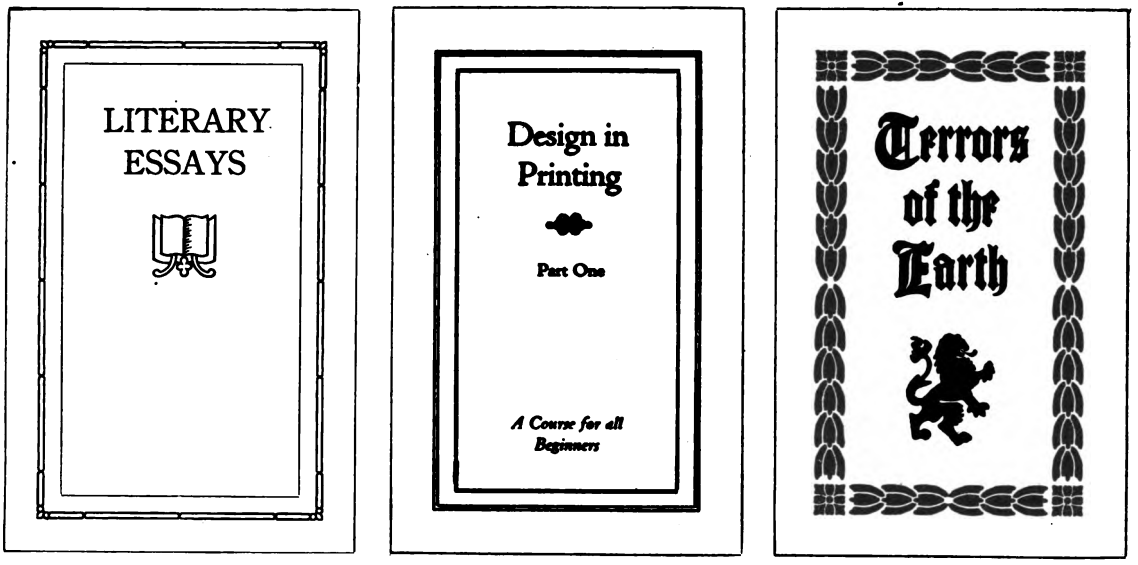

A—Page in light gray tone. B.—Medium tone in display. C.—Dense black tone.

Fig. 77.—Type designs in light, medium and heavy tones.

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harmonizes with heavy strokes of the heading, and the lighter part with the light elements of the type lines.

It is sometimes desirable to use a certain ornament or border on a piece of printing, which is too heavy to harmonize with the text matter. This can be accomplished by printing the heavier matter in a tint that will subdue the tone sufficiently. The same can be done with initial letters.

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CHAPTER VII

The Development of Ornamentation

The universal appreciation and the desire for ornamentation, which has existed in every age, has had a great effect upon the physical form of most of the things about us, as well as of the printing we use.

Man is endowed with a natural love of beauty and ornament. Early manifestations of this tendency are seen in the wearing of bracelets, ear and nose rings, bright feathers, and many other well known customs of the ancients.

The American Indian gratified his desire for ornament in the painting of his face and body with bright colored paints, the making of highly ornamental robes, moccasins and wampum belts, and even the decoration of his wigwam with characters he liked most. In like manner, the inclination for decoration which would satisfy the tastes of tribal peoples led to the uses of such adornments as their fancy dictated.

With the progress of civilization, more refined taste for ornamentation was developed. The use of meaningless and isolated embellishment gradually gave place to more appropriate decoration which blended into, and became a part of, the objects on which they were placed. Weapons of warfare, including shields, standards, spears, and swords, were fashioned after the artistic ideas of their makers. All kinds of tools and domestic devices were formed in more graceful and proportionate shapes. Buildings were planned that would attract and please the eye as well as afford shelter and security. In all activities, inclination

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toward beauty was manifested. This desire for ornamentation, or love of the pleasing, must be appreciated, if we are to understand the use and place of decoration in printing.

During the Middle Ages, when nations were fighting for existence, there was little opportunity for the development of the art and practice of ornamentation, but with the Renaissance there came an enthusiastic reawakening along this line. Some of the best contributions, to all the practical arts, have come from the work of men of the Renaissance period. It was during this time that some of the most illustrious printers of early Europe developed styles in typography, which have ever since been the patterns for their successors in the craft.

The original source of decorative material of every class seems to have been in nature itself. Many objects in plant and animal life gave the motive for decoration, from the earliest times. Ornamentation adapted from flowers and leaves are perhaps the most predominant in the world of art today. Many pleasing designs taken from animal life are in use. Even the trees of the forest gave the idea for the columns and foliated capitals of architecture. Very widely diversified have been the interpretations of the original subjects, by scribes, painters, sculptors, architects and printers, but all have been inspired and governed by the same art motive.

Not all decorative matter has been patterned from natural objects. Some artists have created designs with lines, spaces and spots of color, whose definite aim has been to form beauty from abstract ideas, without borrowing from the forms of living things. Other designs have been patterned from manufactured articles, such as harps, candlesticks, bells, books, and the like.

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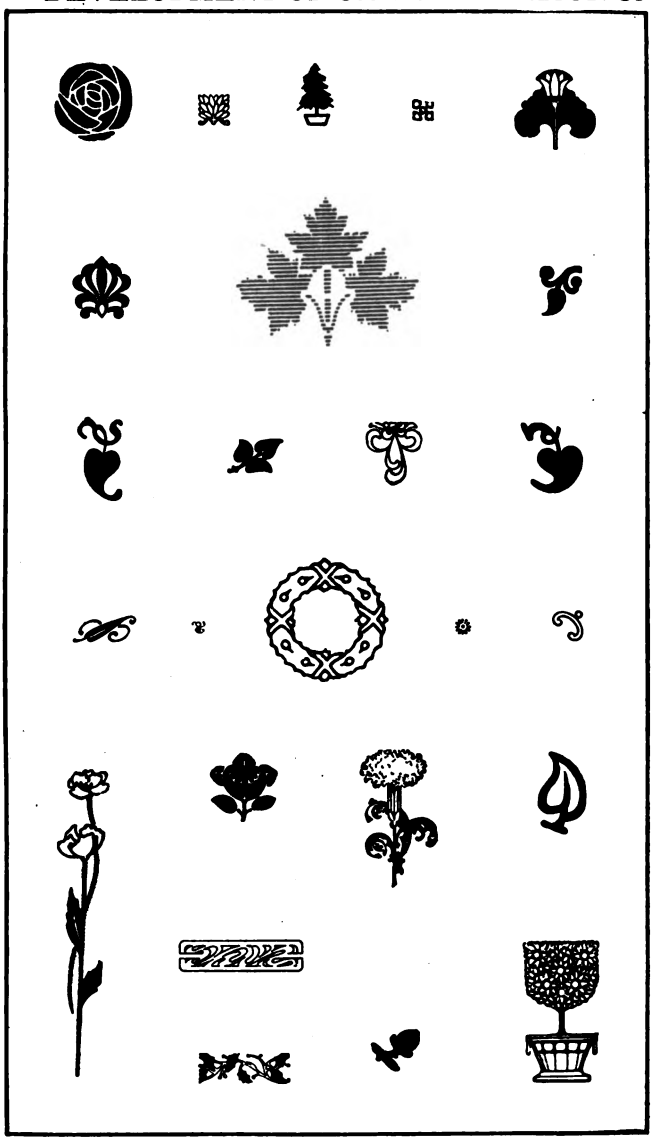

Fig. 78.—Styles of ornamentation based on flowers and foliage.

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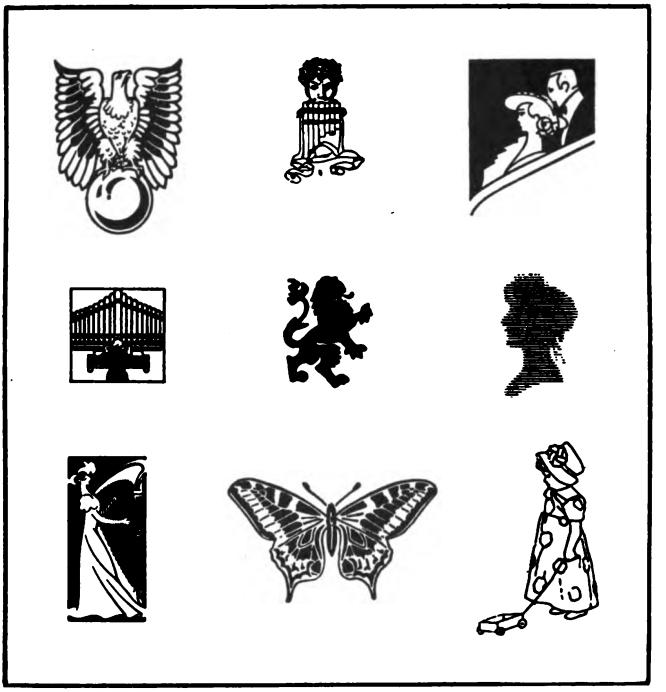

Fig. 79.—Ornaments adapted from life.

Religion, also, has dictated many forms of ornamentation, a few of which are illustrated in Fig. 82.

Ornamentation, in its most pleasing form, must not only be imitative, but inventive as well. Exact reproductions of leaves and flowers, or harps and candlesticks, would not harmonize with the surroundings, if utilized as typographical decorations. This is readily seen in Fig. 81, in which a pictorial illustration serves as a decorative spot. A conventional ornament, without shadows or perspective, as are those in Fig. 78, would improve this design very much.

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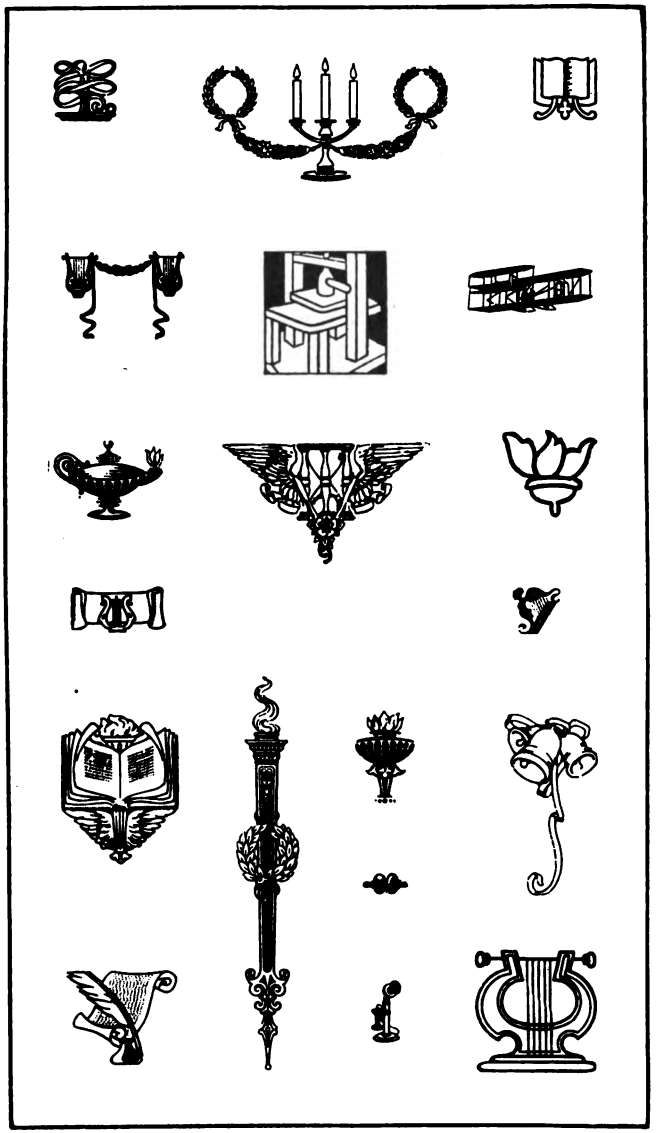

Fig. 80.—Styles of ornamentation based on inanimate objects.

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An illustration must be conventionalized, or blended with its environment, in order to be effective in printing. Conventionalization is the adaptation of natural motifs, whether floral, animal or artificial, to suit new conditions or sur-

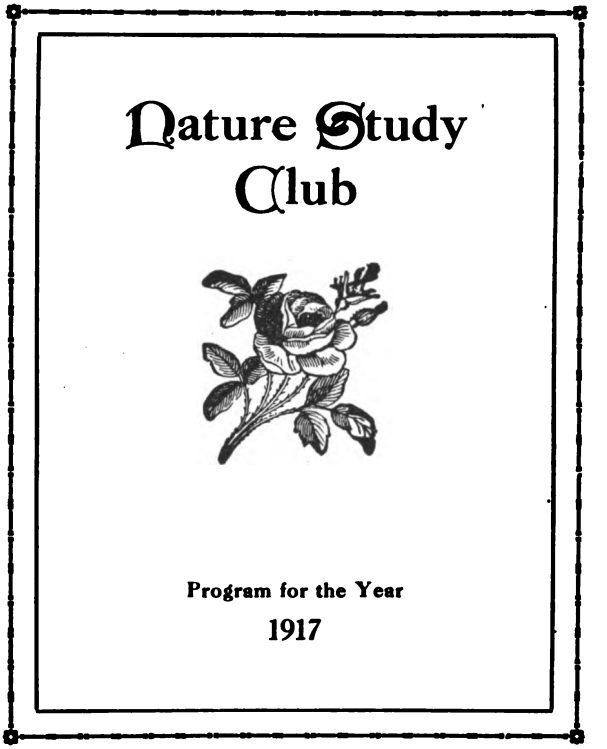

Fig. 81.—Wrong kind of decoration.

roundings. Necessary changes are made in the actual form and shape. Parts are added or taken away, if found necessary. Ruskin says "conventional designs are man's expression of nature in his own materials."

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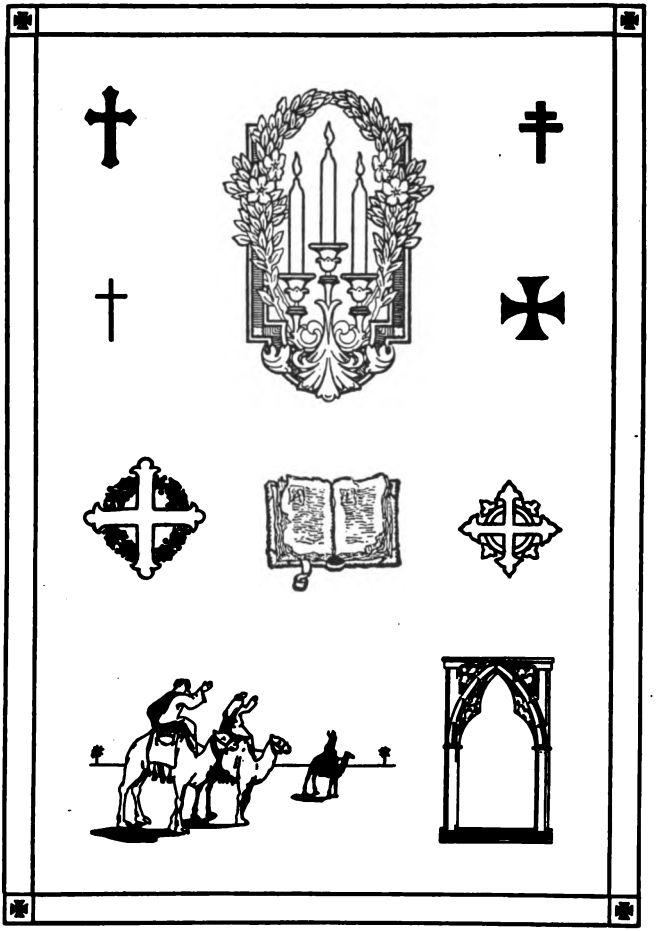

Fig. 82.—Decorative designs inspired by religion.

For printing purposes, an ornament must be made to harmonize with the flat surface of the paper and the smooth, even impression of the type with which it is used. It must also bear

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some direct relation to the subject matter or the manner of its treatment, and satisfy the laws of tone and shape harmony, in respect to the general typographic style.

A few representative ornaments are reproduced in the accompanying figures, being divided into four groups, according to the origin of the motif for each design. All these ornaments have been conventionalized.

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CHAPTER VIII

The Use of Ornamentation

In the foregoing chapter it will be seen that there are different types of ornamentation, and that judgment must be exercised in the selection of ornament, in order that it may be in keeping with the nature of the piece of printing. Promiscuous use of art materials without consideration of its property, is in violation of the rules of practical art, and often times results in very displeasing combinations.

"Ornament," says the Standard Dictionary, "is a part of an addition that contributes to the beauty or elegance of a thing." It is secondary, or subservient, to the thing on which it is to be placed. It will be important to remember, then, that ornamentation never exists for itself, and it should never be used unless it has a definite purpose to perform. This is equally true in every line of art.

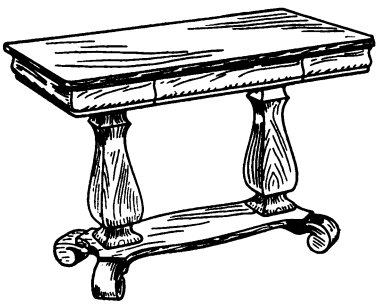

Fig. 83.—Example of simple but pleasing use of decoration in furniture.

Decorative borders or stripes around a rug define its edges, and introduce pleasing shapes and proportions. They break the monotony of surface and color, and add charm to the whole. Likewise, straight, plain curtains which hang at the windows, in harmony with the plain casing,

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and the other vertical lines of the windows, contribute much to the attraction and comfort of the room.

Appropriate carving, graceful curves and other moderate decoration applied properly, will add beauty to a chair or table. If improperly executed, or unintelligently placed, it will mar instead of beautify the structure. The famous designer, Chippendale, made his furniture serviceable as a first consideration, and then added suitable ornament, from which fact the printer may profit.

Fig. 84.—A building in which the ornamentation "contributes to the beauty or elegance." Though not conspicuous in itself, it gives the finish and style which make the building pleasingly attractive. A fine example of ornament applied in architecture.

This important rule also applies to architecture. An entirely ornamentless building appears dull and gloomy, but one which is over-decorated does not win our admiration. Only appropriate, harmonious decoration, carefully blended into the general plan of the building, will give the charm and balance which make a beautiful piece of architecture.

Ornamentation should be applied to printing with the same care and good judgment as are exercised in designing fine furniture, buildings, or

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any other object upon which art is practiced. Some pieces of printing, like plain office furniture, need very little in the way of ornament. Others must have more elaborate decorations for the proper treatment of the subject matter. We ex-

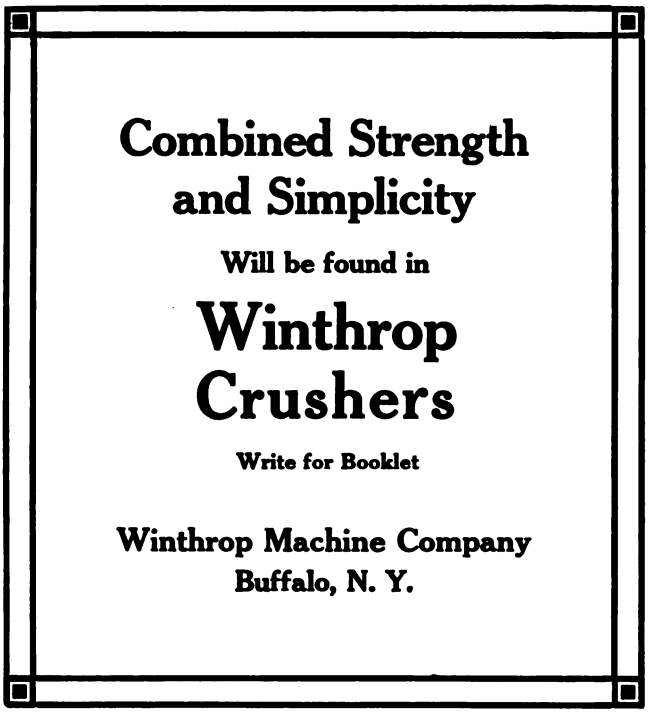

Fig. 85.

pect more decoration on a church building than would be suitable for a factory or mercantile establishment. For the same reason we expect more decoration on religious printing than we would use on work of commercial nature. The matter of style must be determined in each case.

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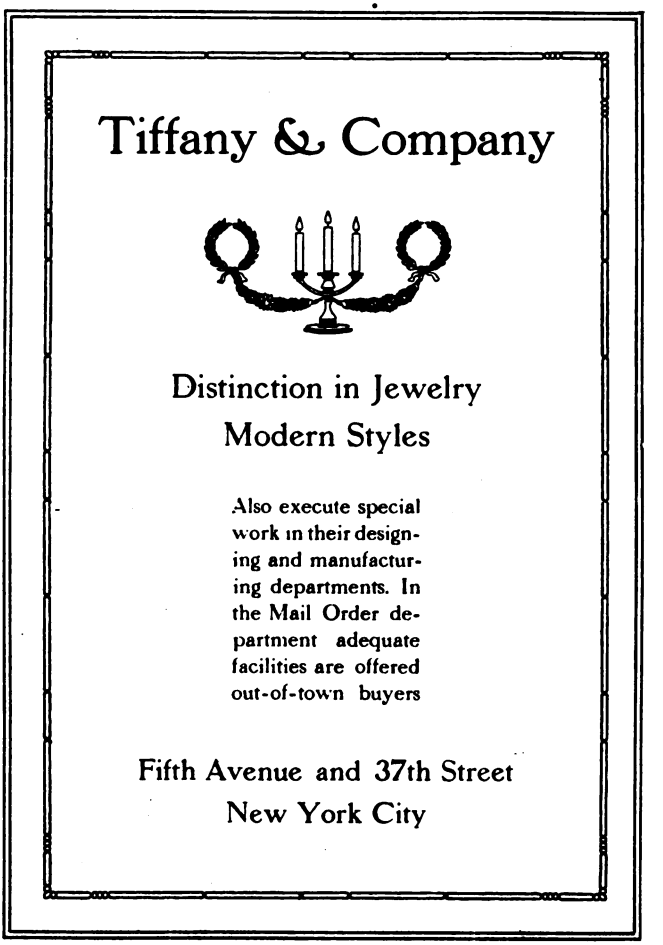

Fig. 86.

Fig. 85 shows a plain treatment of an advertisement, where little decoration would be permissible. The simple arrangement and bold display are very appropriate for the subject.

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Annual Children's

Easter Exercises and Cantata

Sunday Evening
April Fifth

First Church of Christ
Lexington, Iowa

Fig. 87.

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A more ornamental style of advertisement is shown in Fig. 86. This copy, set in style of Fig. 85, would be entirely out of place.

Fig. 87 represents the usual style of religious printing, with Gothic (or Text) lettering and corresponding decoration. The Gothic style has been predominant in ecclesiastical art for many centuries, having been used and sanctioned by the early Church. Pointed architecture and embellishment was used in its buildings, and pointed leaf decoration was carved in its stonework, and drawn or printed in its manuscripts and books. You will note in this design the suggestion of the early Gothic style of architecture.

Thus we see that the arts are all related, and that design and decoration in architecture, and even in house furnishings, bear a direct relation to typography. A consideration of these facts will aid materially in the proper designing of printed work.

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CHAPTER IX

Initial Letters

THE use of initial letters with text matter is older than the art of printing itself. In fact, with the manuscript writers of the middle ages, it reached its highest period of excellence. Their books contained no title-pages, and because of this fact the use of initials was more elaborate than in printing today. Fig. 142 illustrates the use of initials in early manuscript.

Initial letters serve a double purpose on the printed page—that of ornamentation and attraction. When carefully chosen, they add greatly to the pleasing appearance of the page, and lend variety and interest, while their theoretical purpose is to call attention to where the reading matter begins.

The selection and use of initials must be made with due regard to tone, appropriateness and alignment with the text.

The tone of the initial should be as nearly uniform as possible with the tone of the body matter. If the initial is too bold in tone, it will seem to "stand out" on the page, and will appear too prominently, to the detriment of the whole. When a second color is used in the printing, an initial of heavier tone can be printed in the second color, equalizing the tone.

Initials should be chosen that will be appropriate in style and nature of illustration. Letters of larger size in the same type series make pleasing initials. This method is shown in Fig. 88. If initial characters containing illustrative

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design are used, they must be chosen with regard to relevance with the subject matter. Thus, Fig. 89 would be appropriate for work of an educational or cultural nature.

In the matter of alignment a few rules must be followed:

1. The top of the initial letter, or of a rectangular initial design having a straight top, must align with the top of the first line of the text, as in Fig. 88. Whenever possible, also, it is well to have the bottom line of the initial letter or design align with the bottom of the text line running alongside. This cannot be done, however, in many instances.

MORE satisfactory results in business will be obtained by the use of better printing and carefully prepared advertisements

Fig. 88.

2. Where the initial design is irregularly shaped the top of the design proper should be aligned with the text. Fig. 90.

3. The margins at the right side and below the initial must be equal and in accordance with

O ART has contributed more to the progress of civilization than the Art of Printing. The works of the early typographers may be designated as an illumination, scattering the darkness and superstition of the Middle Ages

Fig. 89.

the general character of the page. If insufficient space is left around the initial the matter will look crowded and confusing. On the other hand, if the margins are too great the initial will not seem to

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be a part of the page, and the even tone of the whole will be destroyed. While no set rule can be given for the size of the margins, they can easily be determined by using one's judgment.

A few letters, because of their irregular shapes, offer a different problem in spacing than is shown in Figs. 88 and 89. The letters A and L, when used alone as initials, are difficult to arrange pleasingly because of the large shoulders at the side nearest the first line of the text. Some printers solve this problem by cutting away enough of the shoulder to allow the first line of the text to approach the face of the initial. Alongside the letters T, V, W and Y the lines of the text can be set flush against the initial, as ample margins are afforded by the large shoulders of the letters. (See initial at beginning of chapter.)

INITIAL letters should harmonize in shape and tone with the type matter with which they are used. If light face types are used, the initial should be correspondingly light. Use heavy tones together

Fig. 90.

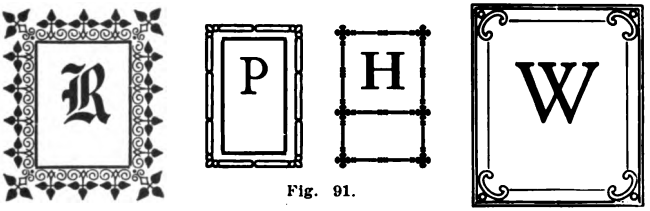

Fig. 91.

Many suitably designed initials can be procured from type founders in many sizes and tones. In addition to these, it is often desirable to compose initials of special characteristics, to secure the proper tone and style. Many good designs can be made, using rules, borders and utilities in combination with the letters. A few are shown in Fig. 91.

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SUGGESTIONS FOR PRACTICAL SHOPWORK

Practical exercises in the use of initials should start with paragraph composition involving initials of regular shapes. Then initials of the T, V, W, and Y class should be used. If characters of irregular shape, as in Fig. 90, are available, these also should be used. There should be variety both in the sizes of the text types and initials, in the different exercises. Special attention should be given to the spacing around the initial, and harmony of tone between initial and text. Good clear stone or galley proofs of these exercises should be sufficient.

When you have completed representative exercises creditably, copies for motto cards, or similar projects, should be selected, to be designed, composed and printed, using both initial and border. It will be well for these to be taken up in class, and comments and criticisms made on the size and style of initial, tone and shape, harmony of text, initial and border, etc.

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CHAPTER X

Tabular Composition

Tabular Composition comprises that class of printing in which the forms are divided into columns, but with the matter aligned across the form. In most cases, rules mark the division of the columns.

THE TWENTY OLDEST NEWSPAPERS IN U. S.

These are the twenty oldest newspapers that are still alive today. Others published at this early period have been discontinued.

NAME OF PUBLICATION	LOCATION	DATE
The Philadelphia North American	Philadelphia	1728
The Saturday Evening Post	Philadelphia	1728
The News and Courier	Charleston, S. C.	1732
The Maryland Gazette	Annapolis, Md.	1745
The New Hampshire Gazette	Portsmouth, Me.	1756
The Mercury	Newport, R. I.	1758
The Connecticut Herald	New Haven, Conn.	1766
The Register	Salem, Mass.	1768
The American	Baltimore, Md.	1773
The Journal	Elizabeth, N. J.	1779
The Gazette	Alexandria, Vt.	1780
The Pennsylvania Gazette	Pittsburg, Pa.	1786
The Courant	Hartford, Conn.	1784
The Chronicle	Augusta, Ga.	1785
The Advertiser	Portland, Me.	1785
The Hampshire Gazette	Northampton	1786
The Gazette	Hudson, N. Y.	1785
The Eagle	Poughkeepsie, N. Y.	1785
The Journal	Windsor, Vt.	1783
The Gazette	Lexington, Ky.	1787

The first paper in the United States was "Public Occurrences," published in Boston, Mass., in 1690.

Fig. 92.

To understand the method of setting this work, let us examine Figs. 92 and 93. The first shows a common form of tabular composition, while the second indicates the separate units of composition of which it is composed.

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The separate units of composition across a piece of tabular work should be planned in multiples of nonpareils or picas, in order to use standard length leads and rules. If the added thickness of the down rules does not total even nonpareils, one-point or two-point leads may be added in suitable places. The justification of lines in the columns must be very exact.

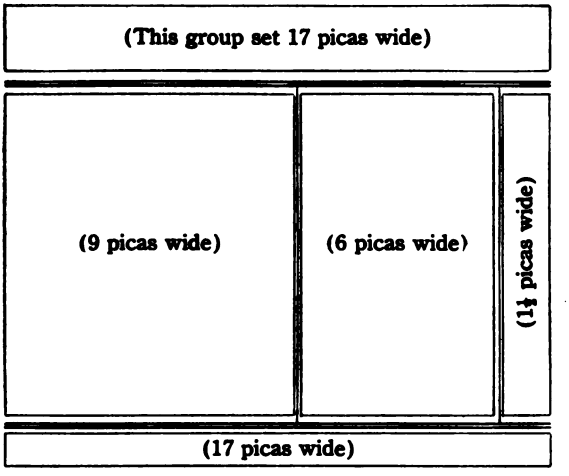

Fig. 93.—Diagram of the composition in Fig. 92.

Each column must be spaced out accurately to the measure of the length of the down rules running alongside. Carelessness in this matter will result in a loose form, and possible injury to the horizontal rules because of uneven pressure in the lockup.

Fig. 95 illustrates some of the methods used in tabular work. Modern and old-style figures are used to show the contrast in appearance when used in the column.

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The matter of tone harmony between the type face and rules in tabular forms is important, although it is frequently disregarded. Many order

Table of Values of Product of Average Establishment in Eight of the Leading Industries

Industry	Production, Av. Establishment 1880	1900	1910
Book and Job Printing	$ 26,200	$ 17,600	$ 23,400
Textiles	125,000	208,000	314,000
Agricult. Implements	35,000	142,000	229,000
Electrical Machinery	35,000	159,000	219,000
Boots and Shoes	75,000	129,000	267,000
Woolen Goods	97,000	194,000	443,000
Paint and Varnish	90,000	116,000	158,000
Clay Products	6,600	14,900	33,500

Fig. 94.—Style of tabular composition composed in one measure.

blanks and price sheets are unsightly because of a lack of care in choosing rules to match the type. Tables containing many down rules, crossed by full width horizontal lines, are sometimes

TABLE SHOWING FEATURES OF TABULAR WORK

THE STUB SHOULD BE LEADERED OUT	MODERN AND OLDSTYLE		En Quads for Decimal Points
	Modern Figures	Proper Position	
The Dollar Mark	$2362.81	27	$24 89
Should appear at head	144.00	65	7 45
Of column, and	1872.01	19	12 50
Should be repeated	916.88	34	10 00
Only with the total	671.29	80	24 75
Down rules should run full length, whenever possible, while the cross rules should be broken at the intersections.			$79 50

Fig. 95.

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composed in two forms, the horizontal lines being composed separately. They are then locked up together and printed "work and turn" on a double-size sheet which is afterward cut to proper size. This often saves considerable work.

SUGGESTIONS FOR PRACTICAL SHOPWORK

Study carefully the tabular form in Fig. 92, and the diagram for its composition. Then set up this or another table, following the plan as explained in the chapter. Where two or more columns are parallel, space out the first column to the full length, in the galley, before adding the second, and so on.

Many suitable projects in tabular composition may be found in the printing of practical jobs for the school district. No tabular jobs should be attempted by the student until he thoroly understands the method as explained in this chapter.

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CHAPTER XI

The Linotype

One of the modern inventions in printing that has revolutionized the composition of body matter is the Linotype. This machine, invented in 1886, and since frequently improved, is one which casts lines of type characters on type-high metal strips, or slugs.

Matrices for the characters are made in different sizes and styles, and when ready for use, are in the matrix magazine placed at the top of the machine. A keyboard, in a degree similar to that of a typewriter, controls the dropping and assembling of these "mats" for casting. The lines are automatically justified by the action of spacebands which are dropped between the words in such places as we would insert three-em spaces in a type line. After the line of mats has been assembled and has passed to its position against the mold-wheel, these spacebands widen uniformly, correctly justifying the line. Immediately after this action molten metal is forced into the mold (which has been adjusted to the proper thickness in points and lengths in picas) and a slug or line of type is cast—hence the name, Lino-type. This line of mats automatically returns from the mold-wheel and each assumes its original position in the magazine while the next line is being assembled.

Because of the absence of justification by hand, and the almost wholly automatic operation of the machine, a high rate of speed in "composition" can be obtained on the Linotype. In addition to this fact, no distribution is necessary, for the used slugs are again put into the melting pot, to be cast over into other matter.

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There are other machines on the market which cast slugs in a much similar manner. Among them are the Intertype, Linograph and Typograph machines.

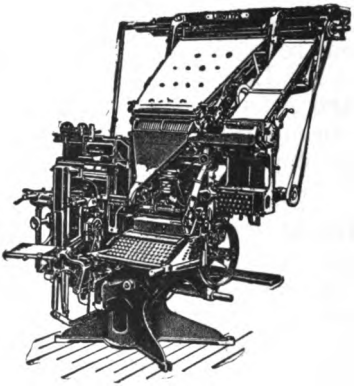

Fig. 96.—The Linotype.

Most of the newspapers, magazines and other similar publications use the Linotype method for composition of the body matter in their regular news columns and in the advertisements. Some of them operate a large battery of machines, night and day. Slugs are also used quite extensively for the straight matter in commercial printing. It can be set at less expense than by the method of hand composition, and it greatly facilitates the production of many ordinary jobs. When carefully laid out and planned for use with display matter, good results may be had from linotype composition in miscellaneous work. It does not, however, displace the element of display composition, nor the necessity of careful designing of the printed page.

Where the finer quality and distinction is desired, hand composition is usually produced. Slugs are necessarily cast in soft metal, and have not the perfection of foundry type. They do not hold the clear, sharp outlines of the characters in long runs.

A visit to printing plants in which linotyping, monotyping, and engraving is done, will give the student much additional information concerning these special methods.

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CHAPTER XII

The Monotype

The Monotype, although a "composer" and caster of body matter, is widely different in principle from the slug-casting machines. Its product is assembled types, almost identical in form with foundry type, but of softer metal and not so well tempered.

Fig. 97.

The Monotype is made in two separate mechanisms—a keyboard machine (Fig. 97) and a caster (Fig. 99). Instead of the connection of the keys to the matrices by means of rods and levers, as on the Linotype, the connection is made through the use of a flexible paper ribbon, as shown below, Fig. 98.

Fig. 98.

When the Monotype operator strikes a key, the paper ribbon carried on the keyboard is perforated. The positions of these perforations across this paper ribbon determine the letters the casting machine will make, just as perforations in a roll of music for a mechanical player determine the notes the piano will play. As the operator thus sets the copy at the keyboard, the ribbon is wound on a spool, which he transfers

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from the keyboard to the casting machine as he desires. The casting machine, controlled by the ribbon from the keyboard makes type, set up in automatically justified lines, delivering the matter on galleys, ready for the compositor to make up into the proper form for printing. Monotype composition need not be distributed, for it may be melted over to be cast into new matter.

The Monotype is used in many printing plants for the composition of books, tables and tariffs, and the body matter of some newspapers and magazines.

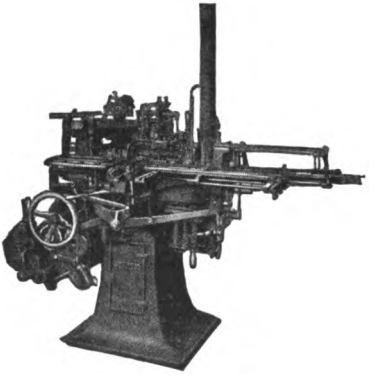

Fig. 99.—Monotype casting machine.

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CHAPTER XIII

Engraving and Embossing

Besides the method of printing from movable types, which is commonly known as letter-press printing, other kinds of printing are done by means of engraved plates known as engraving and embossing.

COPPER-PLATE ENGRAVING

The process of copper-plate engraving was accidentally discovered by a metal engraver of Florence in the fifteenth century. This man had completed the engraving of a silver plate for a church altar and accidentally spilled some chemical onto the work. Immediately he pressed a piece of paper against the engraving to remove the fluid and in this way he obtained an impression of it. Realizing the value of this discovery, he cut various religious pictures in reverse on copper and obtained impressions of them with the use of a crude black ink and paper. The practice of copper-plate engraving rapidly spread through Europe, and the method of doing the work become more perfect.

The engraving of the plate is done by hand. Usually no drawing or sketch is made, the matter to be printed being marked on the plate free-hand and backward.

In the printing the entire surface of the plate is covered with ink, and the surplus is then wiped off with a rag, care being taken not to pull the ink out of the engraved depression. Then the balance of the ink on the surface is polished off with the bare hand. The sheet of paper is laid on the

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plate, which passes under heavy rollers, causing the paper to be forced down into the cuts so that the ink adheres. The best results are obtained on heavy, soft paper. Hard polished papers do not print well, and are injurious to the plate.

The chief characteristics of copper-plate printing are sharp, clear impressions, embossed or raised above the surface of the paper, and a depth of color not obtained by other printing processes. The best engraving is done in a deep velvet black without any gloss. This class of work is used principally for visiting and professional cards, invitations, announcements and social forms.

STEEL-PLATE ENGRAVING

Steel-plate engraving was invented in Boston in 1802. It came as a result of attempts to make engravings that would wear longer. Steel engraving plates are more durable than copper, as well as more expensive. They admit of a greater variety of work, such as ruled backgrounds, clouded effects, borders and very light hairlines. Common examples of steel-plate work are postage stamps (printed 400 at a time), United States currency, bond certificates and diplomas.

The cutting of the design is done in soft steel and when completed the plates are case-hardened. The process of engraving and printing from steel plates is, with few exceptions, the same as in copper-plate work. Colors may be used in this process, but usually dull inks, rather than glossy or varnish inks, are used.

STEEL-DIE EMBOSSING

Steel dies are engraved on metal plates about one-half inch thick, and for long runs they are case-hardened. The impressions from these dies are embossed deeper than are plate impressions and they stand out in clear relief.

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A somewhat similar process to that of engraving is employed in steel-die embossing, except that the die is wiped on paper instead of being wiped with rags and polished with the hands. Specially prepared wiping paper, which practically cuts the ink from the surface of the die, permits of the use of ink materials in which varnish is an important ingredient, resulting in a highly glossed impression. A dull effect can also be obtained by the use of flat colors. In some cases plain embossing is desired, and this is obtained by using no ink, the paper bearing only the impress of the die.

Steel-die embossing is used largely on articles of printing as monogram, heraldic, emblem and address stationery.

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CHAPTER XIV

Principles of Advertising

The preparation of copy for advertisements should be most thorough, based on an intelligent and definite conception of its purpose and the character of its "audience," or the class of people it is intended to reach.

The logical way to plan a piece of advertising copy is to first get the reader's favorable attention and arouse his interest in the article in question (the method of doing so will depend on the nature of the merchandise); then create the desire to possess it; next, to influence him to take definite action—either to buy at once, to come and look over the stock of goods, or send for catalog. What results will follow the purchase? What effect will it have on the health, wealth, comfort or happiness of the buyer? These are questions that must be anticipated, and answered to the satisfaction of the prospective buyer. The copy must be clear, concise and convincing. Unity, coherence and simplicity must be apparent in the ad as a whole.

If the ad is to be placed on a page containing miscellaneous matter, the attention of the reader must be attracted (pleasantly) to the message it contains. A well-written heading and a proper display of the whole will accomplish this. Then the reader's interest must be aroused, a desire for the article or service created, and, as a climax, action must be stimulated, to make the ad a successful one. The phrases, "Ask your dealer," "Take home a box today," and "Send today for a catalog," are exhortations which, if preceded by

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a well-written argument or appeal, will do much to promote sales.

Careful lay-outs should be made for all ads, large or small. Their arrangement and design is of prime importance. They should not be laid out simply to be "pretty," but should be designed to secure the attention by following the laws of artistic display.

Fig. 100 illustrates a common method of advertising followed by many small merchants, which arouses no interest, and accordingly falls short of its mark. The same subject-matter, rearranged in a way to attract attention and create interest, as in Fig. 101, undoubtedly would sell more fountain pens.

A few rules concerning general arrangement of ads are here given. Exceptions to some of these rules are sometimes made by successful advertisers, but it is advisable to follow them as closely as possible.

The most pleasing margin of white space between the body and outside border of an ad is that which is one-tenth as wide as the composition of the body.

Five or six words are as many as can be used successfully in a heading. They should be so arranged that they can be read at a glance. For this reason lower-case letters are used extensively for headlines, being more legible than all caplines. The headline should contain only carefully chosen words, for on the impression it makes, depends the attention that will be given the message it introduces.

Such headlines as "Do you know?" "Safety first," "Attention," and the like, are not effective, and are only a waste of space.

Pictures and illustrations, especially those of animate objects in action, constitute effective

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devices for attracting attention and holding interest. Illustrations are more or less effective in advertising in proportion to their relevance to the

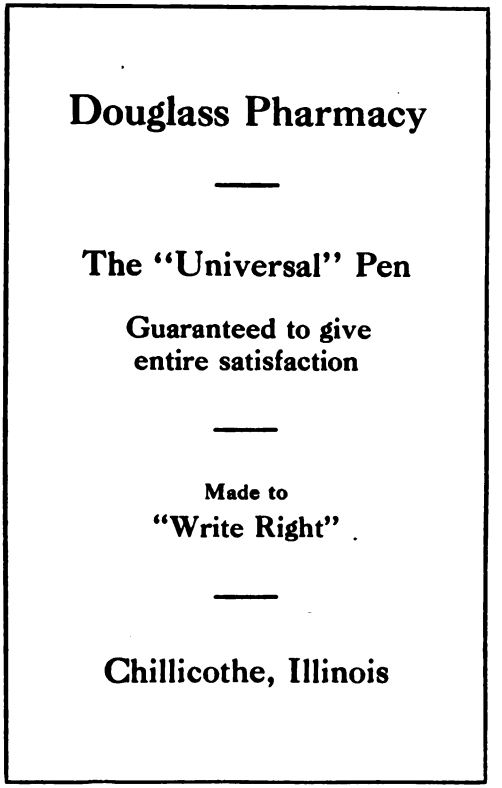

Fig. 100.—An ad without interest.

general nature of the appeal, or the character of the merchandise in question.

Illustrations must be more than attractors. They must strengthen the impression made by

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the text-matter by their presence, and constitute an element in making, or helping to make, sales. It is better not to use any illustration at all than

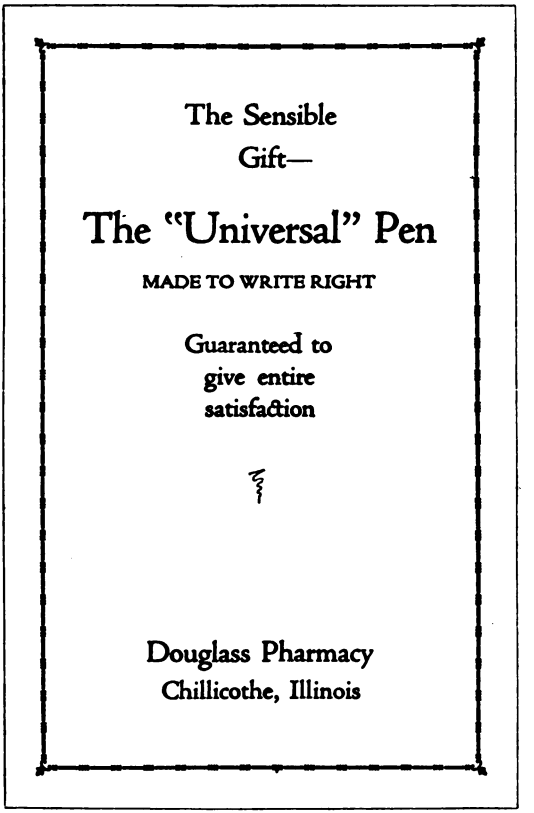

Fig. 101.—Re-arrangement of the foregoing ad.

to use a cut which has no connection with the definite theme of the ad.

The location of an ad in a periodical has a great deal to do with its effectiveness, according

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to reports and detailed statistics of experienced publicity men. It is conceded that the front advertising section of a magazine has a 25 per cent stronger attraction value than the back section. The position on the page, also, changes its value. The figures given in the page locations shown in Fig. 102 are said to be proportionate with the relative advertising values of these positions.

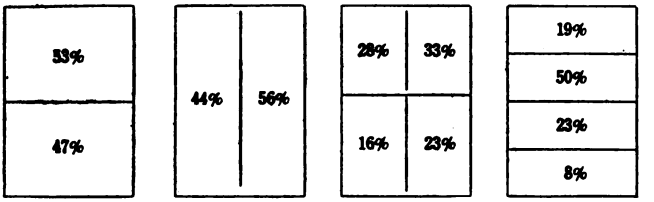

Fig. 102.—Diagram of preferred ad positions on the printed page.

Ads set in capitals are not as legible as those in lower-case. There are some occasions when capitals are not only pleasing, but appropriate, as in the announcement of a classic art exhibit, etc., but as a general rule, the use of capitals should be avoided. Most of our reading is by the perception of word-forms rather than putting together the individual letters. The general shape and appearance of the lower-case characters enables the reader to recognize words so far away that separate letters cannot be clearly discerned. For this reason, lower-case letters are more legible and pleasing to the eye. Compare Figs. 103 and 104.

DIRECT ADVERTISING

Advertising in newspapers and periodicals alone will not constitute a complete advertising

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campaign for every purpose. Direct by mail advertising—in the form of letters, folders, mailing cards, catalogs and other articles—is a vital factor in the sale of all merchandise which is not an actual necessity to the general public, but which must be sold to any restricted class of people, and this includes a great majority of the

QUALITY PRINTING

THE SUCCESSFUL MEN KNOW HUMAN NATURE AND TRADE ON IT TO ADVANTAGE. SUCCESS IS NOT LUCK, IT IS JUST GOOD MANAGEMENT. GOOD MANAGEMENT SEES THE FORCE OF REASON. FOR THE REASON WHY SOME PRINTING DOESN'T PAY, EMPTY THE WASTE BASKET AND STUDY THE QUALITY OF THE CAST AWAY CONTENTS. THEN STOP TO CONSIDER THE VALUE OF THE QUALITY PRINTING WE DO

THE EMERSEN PRINTING COMPANY

Fig. 103.—An ad in all capitals. Difficult to read. Compare with Fig. 104.

articles on the market. Those which can be sold economically by advertising before the general public are the exception rather than the rule.

In order to sell profitably, every firm must reach effectively the people who are in a position to buy or use that which it offers for sale. The plans for each sales campaign should be based on a careful analysis of the most suitable mediums, and these will usually include some form of direct advertising.

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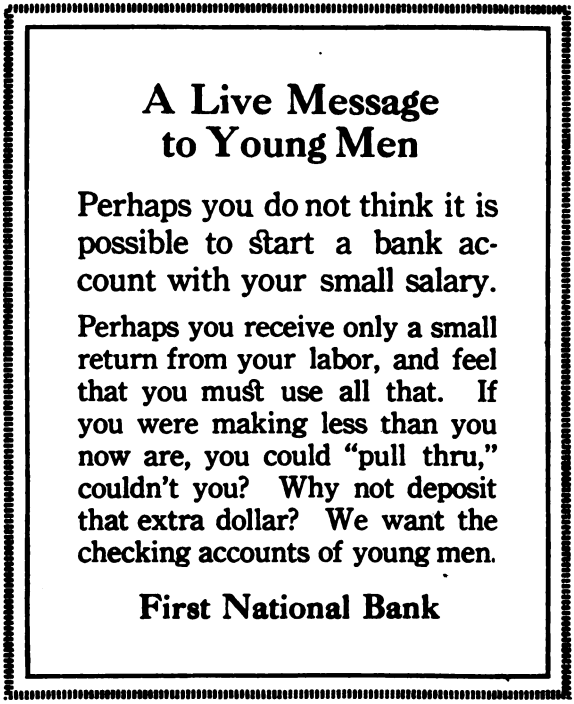

Fig. 104.—An ad set in lower-case letters.

SUGGESTIONS FOR PRACTICAL SHOPWORK

Acquire the habit of studying the ads in the newspapers, magazines, and on the billboards. If they are attractive, or interesting, find out why they are so; if they seem dull or uninteresting, study the reason for this, also.

Clip ads which are poorly arranged and work them over, in lay-out form. Then compose them and compare the proofs with the originals.

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CHAPTER XV

Design in Advertising

The size and shape of an advertisement is usually determined by the general structure of the page of which it is to be a part, and the price of the space. In addition to these considerations the element of attraction in the physical shape of the ad is important. Generally speaking, an ad is most pleasing when its width and length are proportioned on a two-to-three ratio. The character of the illustrations, when used, often make it necessary to radically change this shape, to secure the greatest degree of effectiveness, but an attempt should be made to approximate this shape.

In laying out an ad, the lines of the body matter should neither be planned extremely long nor short. They can be read more conveniently, and consequently will be read by a greater number, if the lines are of average length. From three to three and one-half inches is considered the best width for columns of matter in 10 or 12-point type. Small type in long lines is difficult to follow in order down the page, and larger type in short lines is broken up considerably, making the matter hard to scan readily.

Not many sizes of type should be used in the body of an ad, for the eye must adjust itself to each size, and this makes the message less attractive, and difficult to read.

The principles of good display will govern the style of composition. It will be heavy or light in

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tone, according to the nature of the subject matter, which will also govern the display.

The display features of an ad may be made too bold, or harsh, as specimens on the advertising pages of many newspapers and magazines

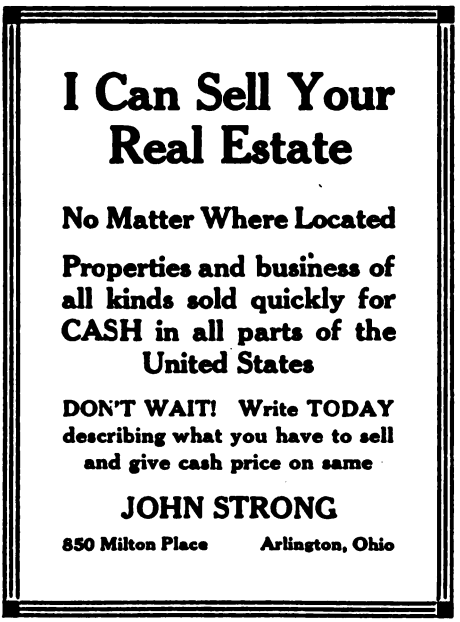

Fig. 105.—An ad, simple in copy and design.

will readily prove. Many of the borders and headlines are too heavy to be most effective. It is not necessary to use black or over-elaborate borders to arrest the reader's attention. In fact, when the reader is attracted by means of such display he is likely to turn past the ad as soon as possible, for he resents (either consciously or unconciously) the mental jar he received from it.

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Many advertisers feel they must introduce something a little different and a little stronger than others, to make ads "stand out" from the rest, and this results in very rude and outlandish border and display styles. The principles of common politeness which forbids one's shouting in the other fellow's ear should also condemn the use of harsh effects in ad display. Moreover, the quiet dignity of the moderate display, like a rational convincing argument, is far more effective.

The border should be the suitable frame for an ad, just as a frame matches and adds the needed finish to a painting. By its pleasing tone and harmony with the different elements of the ad, it should confine the attention of the reader within the space in which the advertiser's message appears. A neat, simple border and plenty of white space around the body matter will attract more attention, create more interest, and inspire more confidence in the minds of the buying public than will pages of gaudy, glaring headlines, black borders and unusual "stunts."

In all cases it must be remembered that the border is secondary to the text, or body matter, and no style of border must be chosen that will detract interest from it. When borders composed of large separate units are used this may be the result. This is because the individual spots attract the eye, causing confusion, and distracting the attention and interest of the reader. Borders made up of small units which readily blend into the whole design and appear as a running band of color are not objectionable, if well chosen for shape and tone. Figs. 106 and 107 show borders which illustrate this point.

Where a number of advertisements are placed together on one page, it is advisable to set them in type of the same general style and tone. This

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preserves the uniform appearance of the page, and lets all the ads appear at equal advantage.

A study of the advertisements used by firms of national repute will reveal the importance of

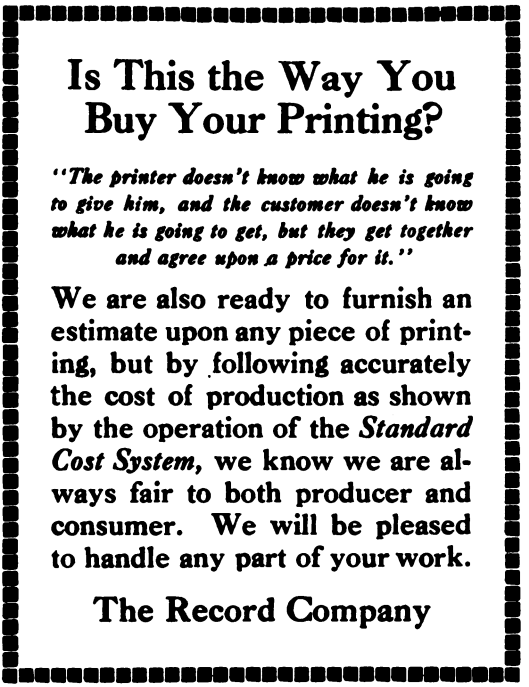

Fig. 106.—The border, made up of individual units, detracts from the body matter.

the suggestions on style and arrangement given in this and the preceding chapter. It is profitable to study the ads of successful business houses, noting their pleasing styles, simplicity in arrangements, and treatment of the subject-matter.

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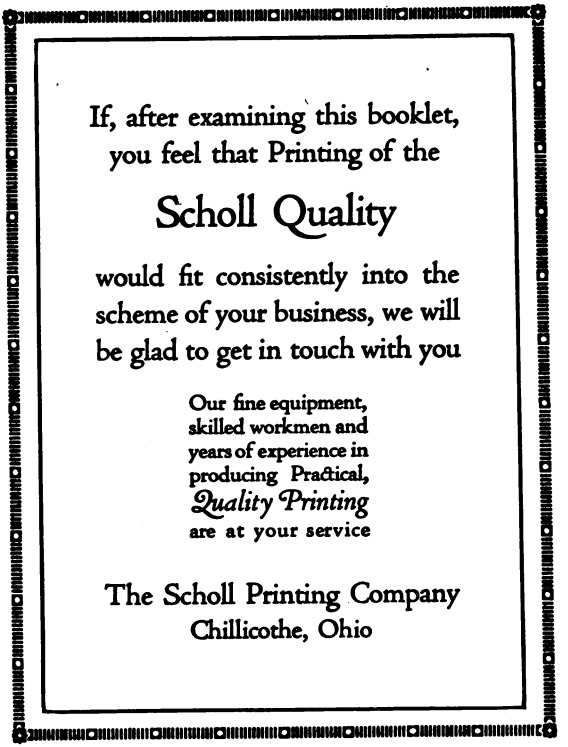

Fig. 107.—This border is pleasing because the lines of the border blend together in a band of color.

Reference—For further study in the composition of Ads, the student is referred to Trezise's Typography of Advertisements, The Inland Printer Co., Chicago.

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PART III

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CHAPTER I

Paper-Making

We ride comfortably in the fine modern train and think very little of the marvelous development in the construction and maintenance of the roadbed over which we glide, and of the important part it plays in insuring our comfort and safety. Likewise, we are prone to admire art in typographic design, and overlook the importance of suitable paper stock in the quality and effectiveness of the piece of printing as a whole. The average person knows little about paper, and probably because of this fact much printed matter is rendered valueless and ineffective by utilizing papers of cheaper qualities and unsuitable varieties that are inconsistent with the nature and use of the printed matter.

John Murray, in 1829, said that paper is "the medium that bears the symbols which register the circumstances and events of past ages." Through these symbols, then, or by means of the printed page, we preserve the history of all the achievements of all peoples, and learn what they thought, and said, and did.

EARLIER MATERIALS

Probably the first material on which characters of speech were inscribed was the stone slab, such as that on which Moses received the ten commandments. Many specimens of stone that have been roughly carved by ancient peoples are preserved today in our museums. Tablets of wood and clay were also used to bear communications and records.

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Up until the first century the Chinese scribes made use of bamboo tablets, upon which they wrote with a stylus, or primitive pen. These tablets were made by interweaving fibers of the bamboo into mats, and rubbing one side until smooth. In A. D. 75, silk was first used instead of bamboo tablets, for royal documents, and this led to the making of "paper" from the fibers of barks and old linen. Later, a sort of wood pulp was used, and this developed into manufacture of Chinese paper, as we know it today.

On our continent the American Indian inscribed his records and treaties on strips of bark or on the hides of animals. He would also weave his message into beadwork. In like manner early peoples of every part of the world employed such materials as were available for the communication of their thoughts, and the commemoration of their deeds.

The earliest material similar to the paper of the present day is the papyrus of the Egyptians. This papyrus was made as early as 2000 B. C., from the rushes growing along the banks of the Nile. The outer rind of the stem was removed, leaving a number of very thin fiber layers. These were flattened out and then interwoven at right angles into a sort of mat, and soaked in water. Afterward the sheets were pressed and the surface rubbed with stone until a suitable finish was obtained. They were then dried in the sun, and were ready to be written upon.

The use of papyrus became very general in Egypt, Greece and other Mediterranean countries, and it was from this word—papyrus—that the modern word, paper, is derived.

Other early "papers" were parchment and vellum. Parchment was made from the skins of sheep and goats. The skins were steeped in lime

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and stretched upon frames, to be scraped down to the proper thickness with sharp instruments. Vellum was made in the same manner from the skins of young calves. The terms "parchment" and "vellum" are often used in designating paper made to imitate the real materials. A diploma is called a "sheepskin" from the fact that many are printed on genuine sheepskin.

THE MANUFACTURE OF PAPER

We have mentioned above that the Chinese began the making of a crude paper during the first century. They may properly be called the inventors of paper as we have it today. The secret of their process was kept very closely until 740 A. D., when the information was transmitted to Europe through Arabs, following their conquest of a Chinese province.

The industry of paper-making gradually spread in Europe, first to Spain, France and Sicily, and later to Holland and other countries. The first mill was built in England in 1498 by order of King Henry VII.

The first paper mill established in America was located at Roxborough, near Philadelphia, in 1690.

All paper was made by hand until well into the eighteenth century. Only a few machines were constructed for any part of the process, and they were not practical. The raw materials from which paper was to be made were placed in a vat and ground or beaten to a pulp by crude apparatus, often driven by water power. The pulp was dipped from the vat on molds made of fine wires intercrossed, and as it dried it formed sheets on these molds. The sheets were placed in a press to flatten and remove more of the

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water, and then hung on wires to thoroughly dry and harden.

During the nineteenth century rapid strides were taken in the development of paper-making. Machines were made to beat and mix the pulp scientifically; to feed it automatically onto revolving belts of wire cloth which carry it from one process into another until a finished sheet was obtained. Instead of crude, uneven sheets, uniform thickness, size and finish were obtained.

Nearly all kinds of paper are now made in long webs or continuous rolls, on cylinders which carry the crude material from the pulp vat to rollers which squeeze out part of the water, then to drying cylinders which remove all the moisture. Some papers are also carried between hot cylinders, under heavy pressure, becoming smoothed, or calendered. Other processes are applied to coated, enameled and other special papers before they are ready to be cut into the finished size.

Only certain high grade papers are now made by hand, and a large per cent of these are imported from Europe and Japan.

The principal materials from which paper is made are cotton and linen rags, hemp, jute, wood, straw and waste papers. The following species of wood are now being used in the United States, for the manufacture of paper: Spruce, hemlock, poplar, balsam, pine, beech, maple, white fur, and cotton wood.

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CHAPTER II

Kinds and Uses of Paper Stock

It would be very difficult, and perhaps even impossible, to write a description covering all the different kinds of paper stock on the market today. In this chapter, only representative general classes of paper will be taken up.

Print paper is manufactured largely from wood pulp, and is the cheapest grade of paper for printing purposes. It is used for the making of newspapers and for cheap posters and handbills. It is furnished in flat sheets, in two-ream bundles, to publishers using flat-bed cylinder presses (Fig. 5), and in large rolls for use in the rotary presses of the large city newspapers.

The most common paper is the white, soft, dull-finish stock, called Machine Finish Book paper. This is used very extensively for books, magazines, and a large per cent of the common grade of printing. Machine finish book is made in a number of weights (thicknesses of sheets) and sizes. A rough-finished variety is known as Egg Shell Finish M. F. Book, popular for small programs, folders, and even catalogs and books. A calendered book paper (S. and S. C. Book), of harder and smoother finish, is also used extensively in this class of printing.

Enameled book paper is that which has been given an extra coating or finish of enamel, having a fine, glossy finish. There are three kinds of coated papers—ordinary smooth, highly polished, and dull finish. These are also made in a number of weights, sizes and qualities. The use of dull finish paper is very desirable in work containing

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much reading matter as it obviates the dazzling reflection of light, permitting the matter to be read with more ease and comfort. This finish is made in white, gray and India tint.

Bond paper is a strong stock made largely from rags and linen, used for business stationery, ruled blanks and similar kinds of printed sheets. It is surfaced for the use of pen and ink and is made in bond, linen and ripple finish.

Ledger and Flat Writing papers, with bonds and linens, have a smooth surface and are sized, or finished, for the use of pen and ink. These papers are used for loose-leaf books, blanks, record sheets, letterheads, and many other articles in this class.

There are many kinds of cardboards, including bristols, coated boards and tagboards. Other common paper products are cover papers, tissues, blotting, gummed paper, and bookbinders' boards and papers.

The table in Fig. 108 gives the common sizes in which these classes of paper are usually made. Other sizes are listed by paper dealers, but these are the ones ordinarily used.

Nearly all kinds of paper are wrapped in packages of one ream—500 sheets. Cardboards are wrapped in packages of 100 sheets. Printers are required to pay a higher rate for odd amounts of paper which necessitate breaking the standard packages.

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SIZES OF PAPER STOCK

Representative Papers	Common Sizes
Print	24x36
M. F. Book	24x36, 25x38, 28x42
Enamel Book	24x36, 25x38, 28x42
Bond	17x22, 19x24
Mills	17x22, 19x24
Ledger	17x22, 19x24
Bristol	22x28, 22½x28½
Cover	20x25, 22½x28½

SIZES OF STATIONERY ITEMS

Full-Size Letterheads	8½x11
Memorandum Heads	8½x7½
Half Sheet Letterheads	8½x5½
Noteheads	6½x9½
Billheads (Sixths)	8½x4⅔
Billheads (Fourths)	8½x7
Billheads (Thirds)	8½x9⅓
Billheads (Halves)	8½x14
6 Envelopes	3⅝x6
6¼ Envelopes	3½x6½
7½ Envelopes (Twofold)	4x7½
9 Envelopes	3⅞x8⅞
10 Envelopes	4⅛x9½
Standard Filing Cards	3x5, 4x6
Postal Cards	3½x5½

Fig. 108.

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To find the necessary amount of paper stock for a job of printing, the number of pieces to the full sheet of stock must first be ascertained. This will be found by writing the dimensions of the piece of printing under the figures representing the full size of the stock to be cut. Then by the process of cancellation, the number of pieces per sheet will easily be found. When this number has been divided into the total number of pieces of printing desired (which number should include a spoilage allowance), the quotient will be the number of full sheets required for the job.

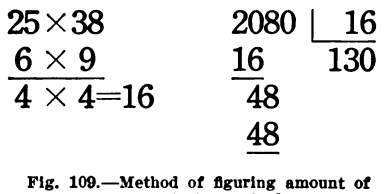

Fig. 109.—Method of figuring amount of paper stock required.

Fig. 109 illustrates this process. In this problem, 2000 pieces, size 6x9 inches, are to be printed from 25x38 M. F. Book stock. The number of full sheets required is 130.

The following table gives the ordinary allowances of extra sheets for spoilage to insure a full number of finished copies of printed matter:

Number Copies of Finished Jobs	Per Cent extra sheets for one color	Each Additional Color
100 to 250	10	5
251 to 500	6	4
501 to 1,000	5	2½
1,001 to 5,000	4½	2½
5,001 to 10,000	3½	2½
10,001 to 25,000	2½	2½

Over 25,000, 2% for each operation. For less than 100, allow the same number of sheets, as for 100, for each handling.

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AMOUNT OF PAPER REQUIRED IN PRINTING

The standard spoilage allowance is included for one color. Left column lists number of copies to full sheet of stock. Figures to right indicate the number of full sheets required.

Finished Copies	50	100	200	300	400	500	600	800	1 M	1200	1500	2000	2500	3000	4000	5000	10 M
2 to sheet	30	55	108	162	214	268	320	420	525	625	780	1040	1300	1560	2080	2580	5100
3 to sheet	20	37	72	108	144	179	214	280	350	414	520	693	867	1040	1387	1720	3400
4 to sheet	15	28	54	81	107	134	160	210	263	313	390	520	650	780	1040	1290	2550
6 to sheet	10	18	36	54	72	89	107	140	175	208	260	347	434	520	694	860	1700
8 to sheet	8	14	27	41	54	67	80	105	132	157	195	260	325	390	520	645	1275
9 to sheet	7	13	24	36	48	59	72	93	117	139	173	231	289	347	463	574	1134
10 to sheet	6	11	22	33	43	54	64	84	105	125	156	208	260	312	416	516	1020
12 to sheet	5	10	18	27	36	45	54	70	88	104	130	174	217	260	347	430	850
15 to sheet	4	8	15	22	29	36	43	56	70	84	104	139	174	208	278	344	680
16 to sheet	4	8	14	21	27	34	40	53	66	79	98	130	163	195	260	323	638
18 to sheet	4	7	12	18	24	30	36	47	59	69	87	117	145	174	232	287	567
20 to sheet	3	6	11	17	22	27	32	42	53	63	78	104	130	156	208	258	510
21 to sheet	3	6	11	16	21	26	31	40	50	60	75	96	124	149	199	246	486
24 to sheet	3	5	9	14	19	23	27	35	44	52	65	87	109	130	174	215	425
28 to sheet	3	5	8	12	18	19	23	30	38	45	56	75	94	112	148	184	367
32 to sheet	2	4	7	11	15	17	20	26	33	40	49	65	82	97	131	162	319

Fig. 110.

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COST OF PAPER PER HUNDRED FULL SHEETS

Weight of ream—	12	14	16	20	24	28	32	35	36	40	42	48	50	60	70	80	100	120	150
5c lb.	.12	.14	.16	.20	.24	.28	.32	.35	.36	.40	.42	.48	.50	.60	.70	.80	1.00	1.20	1.50
6c lb.	.15	.17	.19	.24	.29	.34	.39	.42	.44	.48	.51	.58	.60	.72	.84	.96	1.20	1.44	1.80
7c lb.	.17	.20	.23	.28	.34	.40	.45	.49	.51	.56	.59	.68	.70	.84	.98	1.12	1.40	1.68	2.10
8c lb.	.20	.23	.26	.32	.39	.45	.52	.56	.58	.64	.68	.77	.80	.96	1.12	1.28	1.60	1.92	2.40
9c lb.	.22	.26	.29	.36	.43	.51	.58	.63	.65	.72	.76	.87	.90	1.08	1.26	1.44	1.80	2.16	2.70
10c lb.	.25	.28	.32	.40	.48	.56	.64	.70	.72	.80	.84	.96	1.00	1.20	1.40	1.60	2.00	2.40	3.00
11c lb.	.27	.31	.35	.44	.53	.62	.71	.77	.80	.88	.93	1.06	1.10	1.32	1.54	1.76	2.20	2.64	3.30
12c lb.	.29	.34	.39	.48	.58	.67	.77	.84	.87	.96	1.01	1.16	1.20	1.44	1.68	1.92	2.40	2.88	3.60
14c lb.	.34	.40	.45	.56	.67	.79	.90	.98	1.01	1.12	1.18	1.35	1.40	1.68	1.96	2.24	2.80	3.36	4.20
15c lb.	.36	.42	.48	.60	.72	.84	.96	1.05	1.08	1.20	1.26	1.44	1.50	1.80	2.10	2.40	3.00	3.60	4.50
16c lb.	.39	.45	.51	.64	.77	.90	1.03	1.12	1.16	1 28	1.35	1.54	1.60	1.92	2 24	2.56	3.20	3.84	4.80
18c lb.	.44	.51	.58	.72	.87	1.01	1.15	1.26	1.30	1.44	1.52	1.73	1.80	2.16	2.52	2.88	3.60	4.32	5.40
20c lb.	.48	.56	.64	.80	.96	1.12	1.28	1.40	1.44	1 60	1.68	1.92	2.00	2.40	2.80	3.20	4.00	4.80	6.00
22c lb.	.53	.62	.71	.88	1.06	1.23	1.41	1.54	1.59	1.76	1.85	2.02	2.20	2.64	3.08	3.52	4.40	5.22	6.60
25c lb.	.60	.70	.80	1.00	1.20	1.40	1.60	1.75	1.80	2.00	2.10	2.40	2.50	3.00	3.50	3.60	5.00	6.00	7.50
28c lb.	.65	.79	.90	1.12	1.35	1.58	1.80	1.96	2.02	2.24	2.36	2.69	2.80	3.36	3.92	4.48	5.60	6 72	8.40
30c lb.	.72	.84	.96	1.20	1.44	1.68	1.92	2.10	2.16	2 40	2.52	2.88	3.00	3.60	4.20	4.80	6.00	7.20	9.00

Fig. 111.

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SUGGESTIONS FOR PRACTICAL SHOPWORK

Secure sheets of different kinds of paper stock, and examine each carefully. A study of the samples from the cabinet of any good paper house will help you to distinguish between the different makes and finishes of stock.

Practice the method given for ascertaining the amount of paper stock for jobs, always adding the proper percentage of extra sheets for spoilage. Use this method in all your practical work in the shop.

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CHAPTER III

Plates and Plate-Making

There are two general classes of printing plates—those made for the reproduction of subjects in order that they may be printed, and those which are merely duplicates of type forms or plates. In the former class the principal processes are half-tone engraving and zinc etching. In the latter are electrotyping and stereotyping.

The method of reproduction most used is that of half-tone engraving. The half-tone is a relief plate, the printing surface of which consists of many small dots. The variation in the size of these dots produces a gradation of tone from light to dark. The half-tone is made by photographing the copy through a finely ruled screen which breaks up the colors, or different depths of tone, so that white is represented in the plate by a pattern of dots so small that the printed impression of them is scarcely perceptible, while black is represented by heavy cross lines, so close together that it has the appearance of solid color.

Every gradation of tone between these extremes is faithfully reproduced by the relative size and density of the dots on the plate.

After the image has been transferred photographically to the copper (or zinc) plate, it is placed in an acid solution, the background being eaten away, leaving the dots in relief. This plate is mounted on a wood or metal base, planed type-high, and is ready for printing.

Fine or coarse half-tones are made by using screens having a greater or lesser number of ruled

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133-line screen 100-line screen

85-line screen 50-line screen

Fig. 112.—Four different screens in half-tones.

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lines to the inch. Coarse half-tones are used in newspapers, and on cheaper, uncoated paper. Fine ones may be used on smooth, hard finished papers. 130-line plates are used most frequently in book and catalog work. They are fine enough to show all the detail that is ordinarily necessary, yet not so fine as to involve undue difficulty in printing.

Fig. 112 shows four different screens used in half-tone work. The illustration in 50-line screen shows rather clearly the nature of the face of the plate, with the dots in relief.

Half-tones are made in a number of finishes, the principal ones being square, oval, outline and vignetted finish. The illustrations in Fig. 112 are square finish. Fig. 99 is in outline finish. Fig. 98 is vignetted, or shaded, finish.

By the zinc etching process, plates are produced whose printing surface is comprised of lines, dotted tones or solid masses of black. The resulting print is an exact reproduction of the original drawing. Subjects containing gray portions, shaded work and varying densities of tone cannot be reproduced by this method. Pen drawings are generally used as copies for etchings. Where shaded effects are desired, they must be produced by drawing fine lines or dots close together. Fig. 113 is printed from a zinc etching made from a line drawing.

Fig. 113.—Zinc etching from drawing.

The element of shade or gradation of tone may be added in a zinc etching through a patent process, known as the "Ben Day" process of tinting. A few representative patterns of this kind of shading are shown in Fig. 114. This is done mechanically, and adds to the original price of the etching.

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The printing of illustrations in more than one color is becoming quite common in fine printed work. For this process, separate plates are made for each color used, and these are carefully registered over one another, often with very fine results. Color plates are usually made by the halftone process, but they may be zinc etchings.

Electrotyping is the art of producing copies, or duplicates, of cuts or type forms, in the form

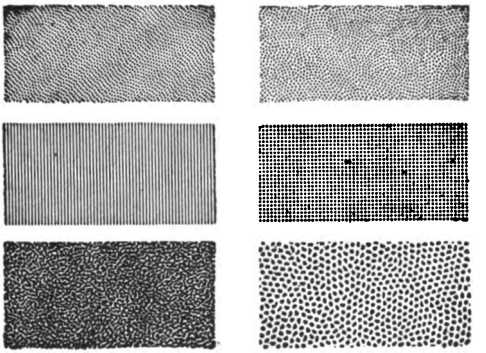

Fig. 114.—Examples of Ben Day tint patterns.

of metal plates made in molds from the originals, and mounted on wood or metal bases. An impression of the form is taken in specially prepared wax, into which the electrotype shell of copper is formed by an electrical process. This shell is backed with lead, and trimmed to size, after which it is mounted on the base. Electrotypes are very generally used in book and job printing when duplicate plates are required.

Stereotyping is the process of duplicating type forms in solid sheets of metal, either type-high or designed to fit special bases. This is done by making papier mache molds from the type forms,

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and placing these in casting boxes in which the molten metal is poured. When the metal has cooled, the plates are removed and trimmed ready for printing. This process is used almost exclusively for the duplication of newspaper forms for rotary presses, newspaper ads, and patent news plates furnished to publishers by syndicates.

Electrotypes are more perfect, and more durable, than stereotypes. Some printing plants include an electrotyping department, in which duplicates of type forms are obtained for tabular work and jobs requiring long press runs. The general rule, however, is to obtain the necessary duplicates in the form of electrotypes, from an electrotype foundry.

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CHAPTER IV

The Theory of Color

In order to understand the proper use of color in printing, we shall construct a diagram or chart of the colors. This will follow somewhat closely the Brewster theory, as it is used generally by printers (that is, those who use any color system at all).

All colors are component parts of a ray of light. This is demonstrated in the rainbow, and also by the use of the glass prism, in which the ray of sunlight is broken up, disclosing the separate elements of which it is composed. To be more exact, color is a sensation produced on the retina of the eye by the action of one or more elements of light. Thus, when the light falls upon an object, that object absorbs some of the rays and reflects others. If we say an object is red, we mean in reality that it absorbs all other rays of light, and reflects the red ones. A substance which reflects all the rays we call white, and one which absorbs them all we call black.

The three colors—red, yellow and blue—will, by mixture, produce all other colors. For this reason they are called Primary colors. Red and yellow, properly mixed, will make orange; yellow and blue will make green; and red and blue will make violet. The colors—orange, green and violet—are therefore Secondary colors. (See Fig. 115.)

The primary and secondary colors form the solar spectrum, their combined color being equivalent to white, or pure sunlight.

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In making a color chart (Fig. 116), we shall include these six colors and two hues of each, making eighteen "wedges" of distinct hues around the chart. These are lettered Y for yellow, GY for green-yellow, YG for yellow-green, etc. GY indicates a hue of yellow in which green is an

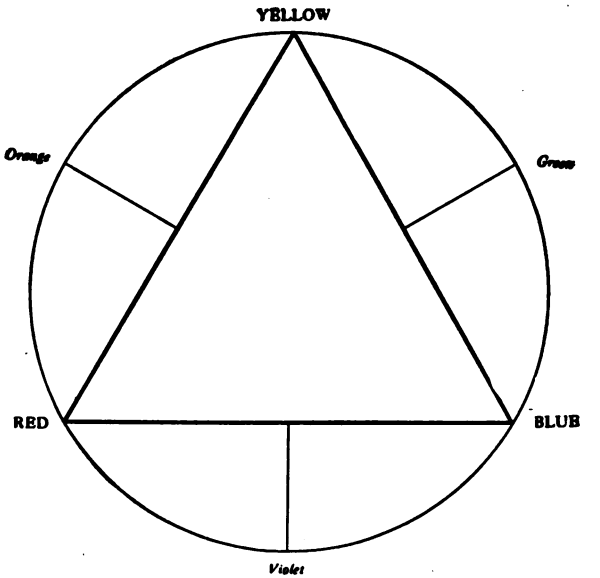

Fig. 115.—Primary and Secondary Colors.

element, while YG indicates a hue of green in which a small portion of yellow has been mixed. Blanks are provided for five values of each hue, two near the center for tints, one for the normal color, and two at the outside for shades of the hue. Each student should construct a color chart on this plan, enlarging the drawing to from 9 to 12 inches in diameter. Pads of colored papers containing all the hues and values can be procured

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from school supply firms. These papers should be trimmed to size and pasted in the proper positions on the chart.

Before proceeding further in the study of color, a few definitions should be studied care-

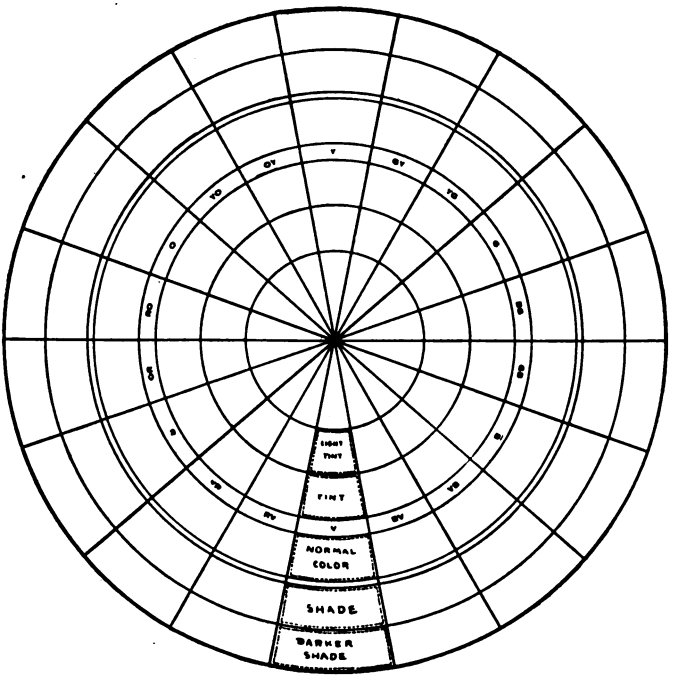

Fig. 116.—Diagram for color chart.

fully, as there is much confusion in the use of color terms. These are taken from the Century Dictionary:

Hue: "Color; specifically and technically, distinctive quality of color of an object; the respect in which red, yellow, green,

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blue, etc., differ from one another; that in which colors of equal luminosity and chroma may differ." Hue is the name of a color. The terms blue, and orange-red name hues, but do not tell us whether they are light or dark (Value), weak or strong (Chroma).

Value: "In painting and allied arts, relation of one object, part, or atmospheric plane of a picture to the others with reference to light and shade, the idea of hue being extracted." Value is the light of a color, or the quality by which we distinguish a light color from a dark one. Different values in any one hue are known as tints and shades.

Chroma: "The degree of departure of a color sensation from that of white or gray; the intensity of distinctive hue; color intensity." Chroma is the strength of a color. An object on which the color has faded without changing the hue or value, is said to have lost chroma, or intensity of color. Sometimes we hear of the "reddest red," or "greenest green." By this is meant the superlative of chroma in the color.

A Tint is a color tone that is lighter than normal.

A Shade is a color tone that is darker than normal.

The term Neutral applies to tones in which no color is apparent. Black, white and gray are neutral tones.

On this color chart, hue may be called the relation of one color to another around the color wheel. Value has to do with the position of the color between the diameter and outer rim of the

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circle. As the chart is planned for the purpose of ascertaining complementary colors on the basis of hues, the chromas of the colors are not indicated, nor can they be shown on a flat chart of this nature.

When two colors are used together in printing, such ones must be chosen that will make a pleasing combination. The best results are obtained when two colors are chosen whose added value is equal to white. These are known as complementary colors, and they are always opposite each other on the color chart.

Blue must have yellow and red with it to produce the equivalent of white light, as these three are the primary colors. Orange is made by mixing yellow and red, and so it is the complement of blue. Green is a secondary color, derived from yellow and blue. Consequently, its complement will be red, as it is the other primary color. All other complementary colors may be found in this same manner.

The law of complementary colors is exemplified in the action of the human eye. When a colored shape of any kind is projected upon the retina, the nerve cells within that shape which are sensitive to that particular color will quickly become fatigued, while all the other nerves within the same portion of the retina (which represent all the other colors of the spectrum, which, in combination, will produce a color that is complementary to the color of the object looked upon) will become sympathetically excited, and will apparently replace the complement in the vision of the person. Accordingly, if the eyes are suddenly shifted to a light surface, this complementary color will be seen instead of the original color looked at. This complementary color is known as the negative after-image.

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Complementary colors enhance each other when used together, but destroy each other when mixed, forming a neutral gray.

If we use in combination two colors that are directly opposite, or complementary, such as yellow and violet, the yellow will appear more of an intense yellow, and the violet more of an intense violet. The yellow will be intensified because it is seen thru the after-image of the violet, and the opposite will be true of the violet.

SUGGESTIONS FOR PRACTICAL SHOPWORK

When you understand the contents of this chapter, prepare to construct a color chart according to the plan shown in Fig. 116. A drawing board, compass and ruling pen will be necessary for this work. India ink should be used for the outlines of the chart. It will be best to draw the chart on heavy ledger paper.

Pads of colored papers for the chart can be purchased from school supply houses. Each color should be trimmed carefully to size and pasted in the correct position. After the chart is completed, it will be well to mount it on heavy cardboard, to preserve it, and to prevent warping.

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CHAPTER V

Warm and Cold Colors

When the colors of the spectrum are deflected, or separated, either in a rainbow or prism, the colors are always shown in the same order—V, B, G, Y, O, R—with Violet and Red at the opposite sides. This is because the color waves are of varying length, and the relative differences are in the order in which the colors appear.

This is also shown in the sun's rays. At noon the rays are white, with no color predominating. As the rays get longer and more slanting, they begin to lose the weaker of the colors, beginning with violet, blue and green. Then as the sun begins to set, its rays appear orange, changing at last to a deep, rich red as the sun disappears from sight over the horizon.

The stronger colors are more stimulating and exciting to the eye and nerves, and for this reason may be classified as warm colors. The others, by way of contrast, are cold colors.

The warm colors are red, orange and yellow; the cold colors, green, blue and violet. Green may be made a warm color by mixing yellow with it.

Each color causes a distinct sensation in the vision and mind of the person. Warm colors attract and enliven the interest, but when used too freely, they are also irritating and exciting. Cool colors, on the other hand, produce a restful state of feeling on the part of the brain and optic nerves. In excess, they may cause depression.

Red is the symbol of passion and excitement. It is the color of blood. It is a very beautiful warm color. We need it in some places to bring

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brightness and cheer, and interest. It should never be used in quantities—only in spots. A little red goes a long way. In nature, red is found in small portions, contrasting most effectively with the greens which predominate.

Orange is symbolic of knowledge and benevolence. Just as the torch and lamp stand for these things in ornament, orange does in color. Representing fire as it does, it must be used sparingly. A little fire is a good thing for warmth and comfort, but a big one may cause damage.

Yellow expresses light, cheer and inspiration. It is the most like the sunlight. Its golden color is symbolic of the sun, or in a broader sense, of God and Divine Providence. Yellow must be used in moderation.

Green suggests coolness and airiness. It is a restful color, very pleasing to the eye, as its lavish use in nature would indicate. In the excessive heat of summer, the green grass and trees, and blue skies, are God's blessing upon man, delightful, cooling and regenerating. Green is agreeable to the eye in large areas.

Blue is the color signifying restraint and constancy, almost opposite to red in psychological effect on the senses. It is the color of the sky which is never permanently changed. Blue, like green, is very restful to the eye and nerves.

Violet is symbolic of loyalty and patience, and is also the color of sadness and grief. It is not only the complementary hue to yellow, but also causes an opposite effect—that of shadow and gloom. Being a retiring color, it serves well as a background when enlivened by its complement.

Browns and grays are quiet and subdued tones, lending themselves to more formal and dignified printing. Both make excellent backgrounds.

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CHAPTER VI

The Use of Color in Printing

From the foregoing chapter it is apparent that the choice of colors should be made according to the nature of the printed matter. Warm colors should not be used on work which by its nature calls for cool ones. A catalog for refrigerators could well contain a preponderance of blue or green, suggestive of lowered temperature, while red or orange would be inappropriate. Winter resort booklets, designed to call the public to the sunny southlands, show a lavish use of bright, warm colors, while on the summer resort booklets the cool greens and blues prevail. Thus the call is made doubly alluring.

A few subjects call for bright warm colors, but these must be used with great care. A red which is attractive from a distance is often too strong when seen at close range. For this reason, colors which appear at advantage on a billboard may not be used with propriety on ordinary printed matter.

In each case, care must be taken to avoid getting the printed page too warm in tone. Only small quantities of the warmer colors may ordinarily be used, but colder colors may be used in larger quantities.

Fig. 117 shows a ticket form printed in orange and black. In this form the warm color creates an unpleasant sensation because it has been made the predominating color. A much better apportionment of color appears in Fig. 118.

Black can be used with any of the hues of the chart, but when used with cold colors, the latter

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Fig. 117.—Ticket form on which too much warm color has been used.

must be lightened to a tint to make the proper contrast, and to brighten up the page. In this connection the chart shown in Fig. 120 will be useful. In this, the colors are arranged between white and black, in the order of their value, or the amount of light they contain. Yellow, having the largest amount of light, can be use as a second color with black, undiluted. Green, blue and violet must be mixed with white in order to increase their value, for contrast.

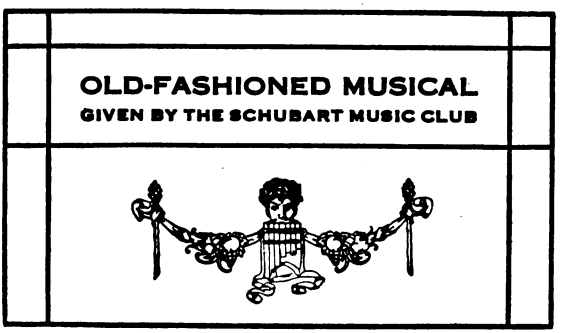

Fig. 118.—Color in better proportion.

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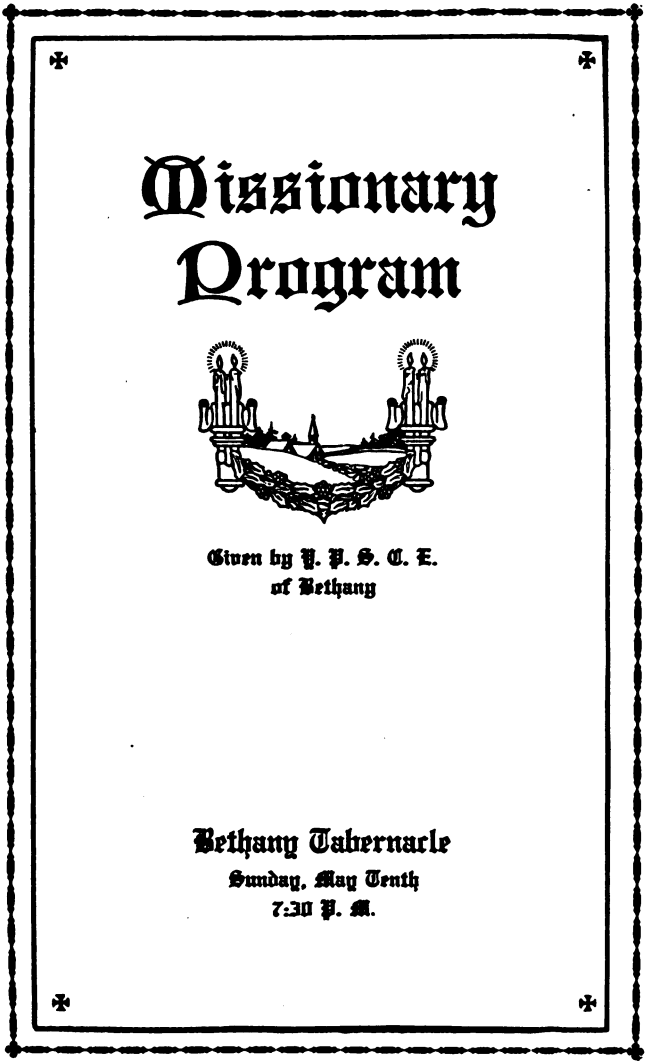

Fig. 119.—Title page in colors.

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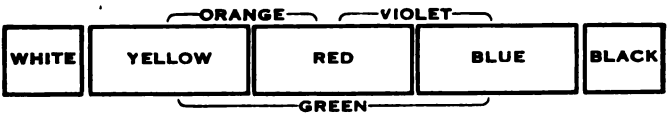

Fig. 120.—Chart of color values.

In this connection we will consider the use of color in religious printing. Orange and black are used for church programs and other ecclesiastical work, while red and green are used on Christmas and holiday work. These colors were used by early religious writers and bookmakers, and have continued to the present day.

We are indebted to Christianity for the development of all our arts, including printing. During the first generations after the invention of printing the entire production was exclusively of a religious nature, and had it not been for the patronage and encouragement given to printers by the early Church, it might not have flourished as it did.

Holiday printing, adapted from the ecclesiastic style, and very similar to it, takes the colors green and red. Green suggests the holly leaves and the Christmas tree. Red represents the holly berries, and is also symbolic of passion and love. Thus, these colors fitly represent the festive season of love, joy, and the birth of our Saviour.

The early manuscript writers ruled their pages in red or orange, the lines forming guides for drawing in black letters of the text. Initial letters were illuminated in red and gold. From the early practice of the scribes comes the style of religious printing, with orange and black colors, the Gothic (or Text) style of lettering, Maltese crosses and uncial initials. Fig. 119 shows a typical form of church printing.

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SUGGESTIONS FOR PRACTICAL SHOPWORK

Before taking up the printing of colors, each student should make a number of lay-outs in color, indicating the black parts with pencil or pen, and the color with a crayon. This will help the student to understand the distribution of color. Each lay-out should be inspected carefully by student and instructor, and if possible, discussed by the class.

When you are ready to print in two colors, begin by composing simple forms for one color, and then mark the parts for second color in the proof obtained. The form may then be separated, as indicated.

In the printing of colors, the form, press, and rollers should be immaculately clean, as the colors are easily changed with previously used colors working in from rollers and press, if not thoroly cleaned.

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CHAPTER VII

The Composition of Letterheads

Altho letterheads are made in different sizes, by far the most common size is 8½ by 11 inches. This is known as the standard full-size letterhead. It is cut from 17x22 bond or ledger paper, four letterheads to a full sheet, or 2,000 to the ream of stock. Memorandum heads are 8½ by 7¼ inches in size, and half-sheets 8½ by 5½.

Standard full-size letterheads are used with Nos. 6¼, 9 and 10 envelopes. With the No. 6¼ envelopes, the sheets are folded once lengthwise, and then folded twice across their width. With Nos. 9 and 10 envelopes, they are folded twice lengthwise. Many firms prefer to use the larger sizes of envelopes, as the latter method of folding leaves the printed heading flat.

A letter sheet, size 7¼ by 10½, known as two-fold size, is used extensively by professional people. When folded twice lengthwise it fits the No. 7, or two-fold, envelope.

Noteheads, smaller than letterheads, are usually made 6 by 9½ inches in size. They are designed to fit the No. 6¼ envelope when folded twice lengthwise.

Simplicity should be the keynote of the typographical design of a letterhead. In the arrangement of the matter, the name of the person or company should be given first place, the line of business second, and the address third. If other matter is included, the form should be carefully grouped and balanced in a way to give sufficient prominence to these three points.

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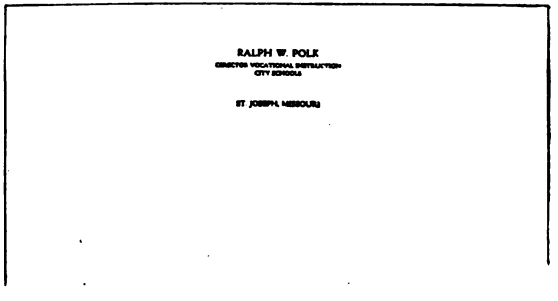

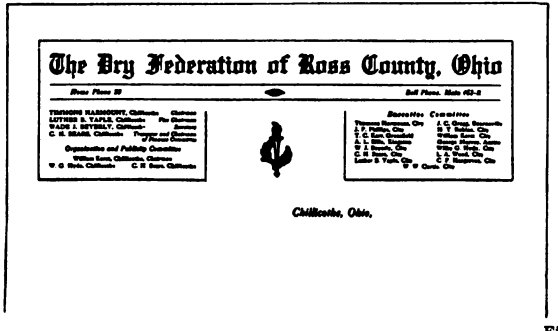

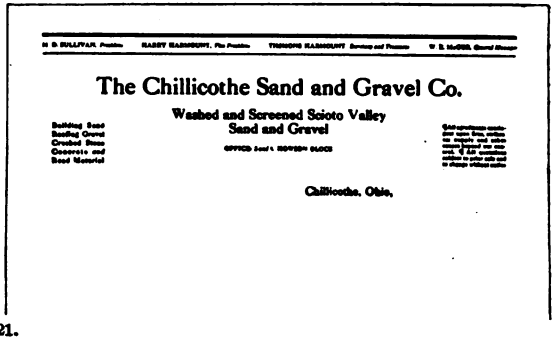

Fig. 121.

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It should be remembered that the letterhead is literally the representative of the writer, and upon the impression it makes will depend the effectiveness of the correspondence. Unusual and freakish effects are, therefore, especially undesirable on letterheads.

Bold face type may be used with propriety on stationery for foundries, mills and like enterprises. Text types are suitable for religious, benevolent and kindred associations. Professional headings should be designed in small sizes of type of medium tone. In each case, the style of display should be based on the nature of the business or association it represents.

In Fig. 121 four letterheads are reproduced, showing different treatment of copy according to the nature of each.

SUGGESTIONS FOR PRACTICAL SHOPWORK

Make lay-outs of letterhead forms that you think would be suitable for specific enterprises. Choose the type style, and make the design, in accodance with your idea of appropriateness in each case. Some of these should be set up in type, and proofs taken on sheets of letterhead size.

Secure copies of letterheads used by representative lines of business. Analyze them, and make new lay-outs for them, as you see they may be improved.

Save all designs of letterheads for reference in later lessons.

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CHAPTER VIII

The Composition of Envelope Forms

Envelopes are made in a great many sizes, but the ones used in commercial correspondence are those mentioned in the preceding chapter. In addition, No. 6 envelopes are used for enclosures. The regular sizes of commercial envelopes are given below:

6	Envelopes	$3\frac{5}{8}$x6 inches
$6\frac{1}{2}$	Envelopes	$3\frac{1}{2}$x$6\frac{1}{2}$ inches
$7\frac{1}{2}$	Envelopes	4 x$7\frac{1}{2}$ inches
9	Envelopes	$3\frac{7}{8}$x$8\frac{7}{8}$ inches
10	Envelopes	$4\frac{1}{8}$x$9\frac{1}{2}$ inches

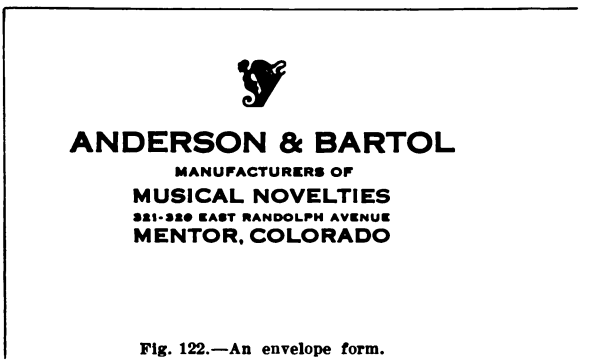

Fig. 122.—An envelope form.

These are made in a number of weights and qualities. No. 6 is listed by some paper dealers as $6\frac{1}{4}$, and No. $6\frac{1}{2}$ as $6\frac{3}{4}$. In either case, the size is the same as given above.

Envelopes are also made in larger sizes for mailing catalogs and booklets. Sometimes these

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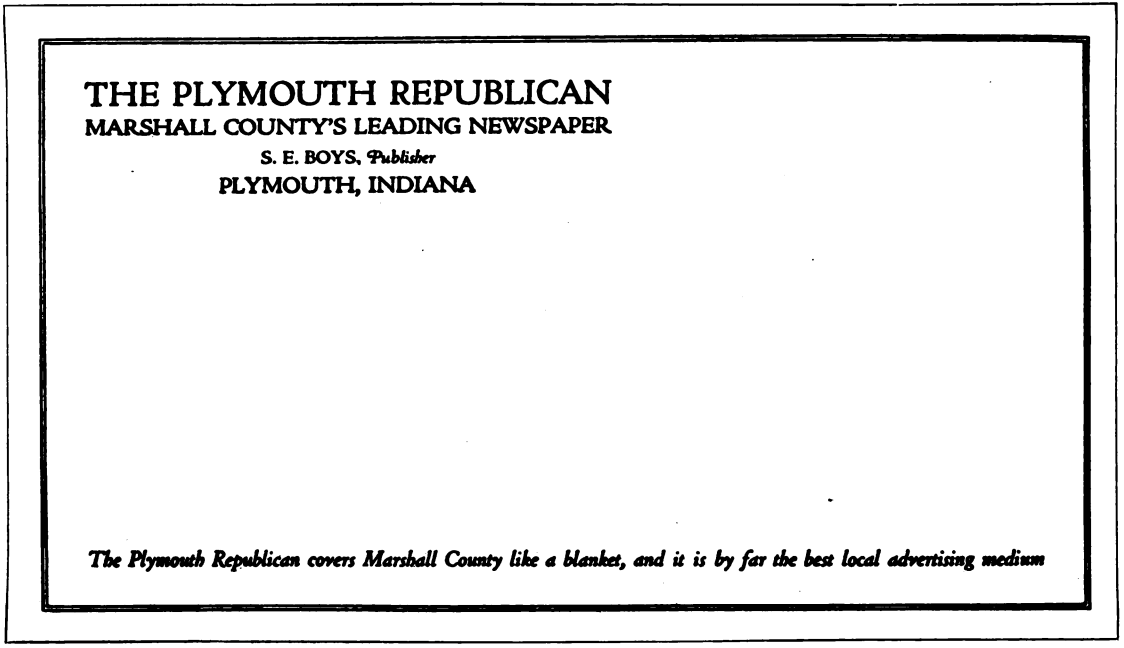

Fig. 123.—Envelope form covering full face.

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are made of the same kind of stock as the cover of the booklet, making a pleasing harmony.

As commercial envelopes are usually designed for use with letterheads, the style of composition should match that of the letterheads. The same rules for the choice of type faces and tone of display which governs letterhead composition will apply to envelope corner cards. The style should always be planned in accordance with the nature of the copy.

It is sometimes desirable to print a large design on an envelope, but when this is done the form should have unity, and should not interfere

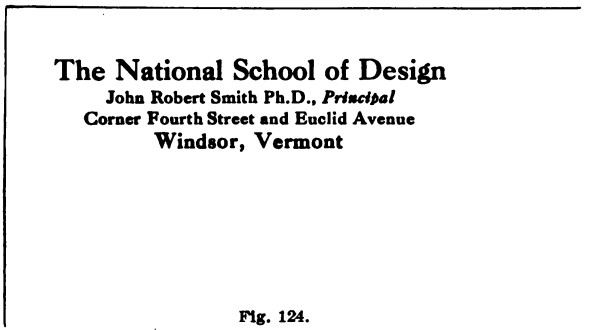

Fig. 124.

with the clearness of the address. Fig. 123 shows an attractive envelope design extending the full width of the face. Anything beyond the simplest arrangement in an envelope form should be done with great care, and all meaningless ornamentation or elaboration should be avoided.

The make-up of the envelope interferes somewhat with the printing of elaborate forms. The double lap of the paper and the mucilage used for joining or sealing are not conducive to the good appearance of the printing, and the type is

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subjected to unusual wear and may be crushed by occasional lumps of dried gum in the seams. Make-readies must be made for all envelope forms, with a view to securing an equal impression, by cutting away and pasting in parts where inequalities occur in the envelopes, but this results in only a comparatively equal impression.

Because of these laps or seams, the use of halftones on envelopes should be avoided, whenever possible. If cuts must be used, line engravings are more practical for this purpose.

Figs. 122 and 124 illustrate common methods of arrangement of envelope corner-cards.

SUGGESTIONS FOR PRACTICAL SHOPWORK

Referring to the letterhead designs you have worked out, select those which are especially well treated, and design envelopes to match them. In most instances, it is best to keep the envelope form as simple as possible. To arrange the copy, follow an arrangement corresponding to "Who, What, and Where?"

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CHAPTER IX

The Composition of Business Cards

There are several sizes of business cards in common use, approximating, 2¼ by 3½ inches. Strictly professional cards—bearing only the name, business and address—are usually smaller, while some cards of more informal nature are slightly larger.

The best cards are die-cut, from 22x28 bristol, and are packed in boxes of 500. The different

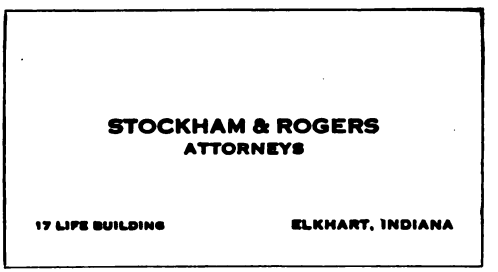

Fig. 125.—Usual form of professional card.

sizes are known by number, 117, 88, 70, 63, 55, 48, 36, so-called because of the number of cards of each size obtained from a full sheet of bristol.

In the arrangement of the form, it must be remembered that simplicity, proportion, shape harmony and tone harmony are necessary to obtain pleasing results.

Professional cards should be set in a small, neat type, preferably all capitals, with no attempt

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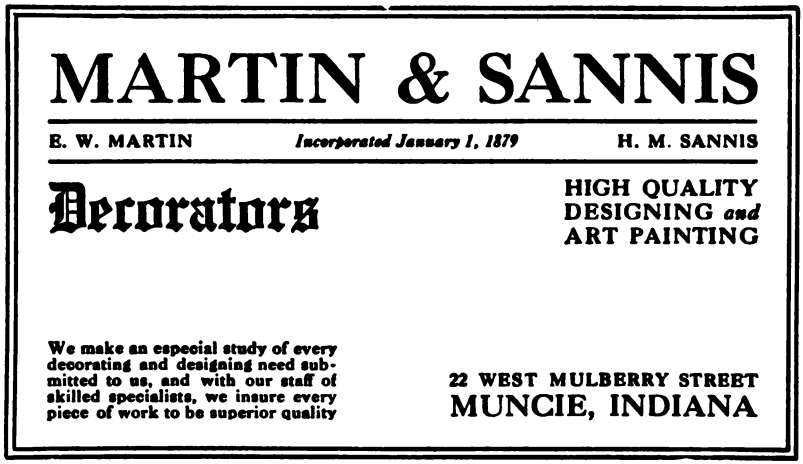

Fig. 126.

at ornamentation. Fig. 125 shows the proper method of arrangement. When a large amount of matter is to be placed on a card, care should be taken to make the matter readable, and yet not appear crowded.

Fig. 127.

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Little variety is permitted in the treatment of business cards. Some subjects, however, can be arranged in less conventional styles than others. In Fig. 126, a business card for a firm of art painters is reproduced, showing a rather informal treatment of the copy.

Other business card forms are shown in Figs. 127 and 128.

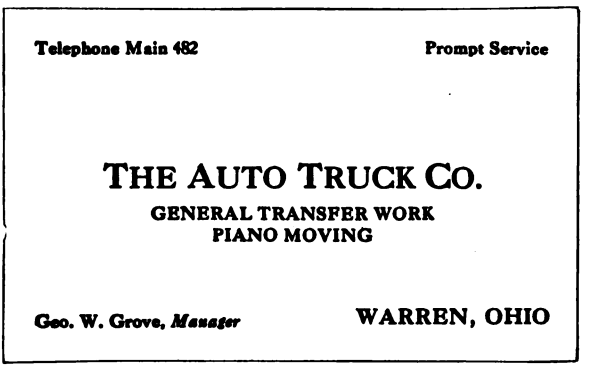

FIG. 128.

SUGGESTIONS FOR PRACTICAL SHOPWORK

Continue the treatment of business cards as you have the envelope designs. Remember that there should be similarity of treatment between all items of business stationery.

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CHAPTER X

The Composition of Tickets

There is no standard size for tickets. A large proportion of them are approximately 2 by 3½ inches, but many are larger or smaller, depending upon the amount of copy, and the nature of the design to be used.

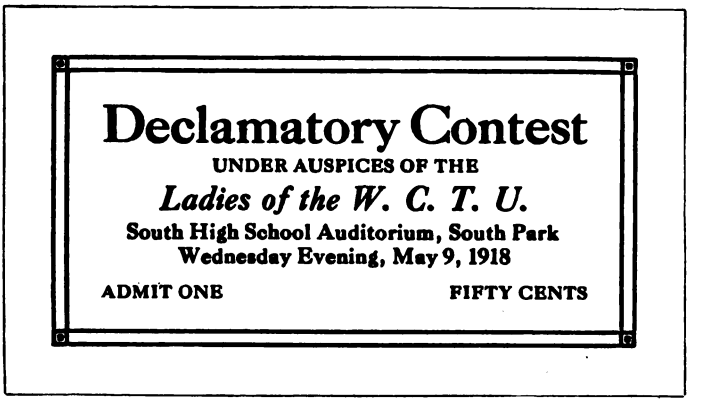

Fig. 129.—Ticket form.

Tickets are ordinarily printed on white or colored cardboard, cut from full sheets to the size necessary for the particular job.

The principles for simplicity, proportion, shape harmony, and tone harmony, mentioned in preceding chapters, are of equal importance in printing of tickets.

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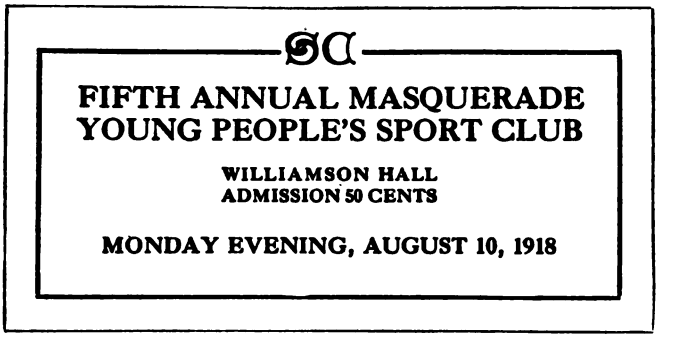

Fig. 130.

There is a wider range for decorative design in the composition of tickets than in that of business cards. They are less conventional, and will admit of more ornament with propriety.

A few examples of ticket designs are shown in this chapter.

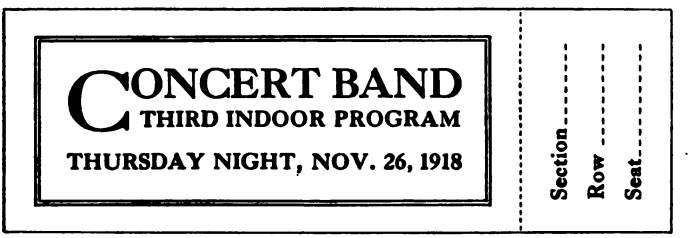

Fig. 131.—Ticket with attached seat coupon.

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CHAPTER XI

Invoices, Billheads and Statements

These three items are very similar in general arrangement and copy, but distinct in their uses. The invoice, mailed at the time shipment is made, contains an itemized list of the goods purchased, and is sent for the information and convenience of the customer. The billhead is mailed to the purchaser within the time in which a cash discount may be made, in order that the buyer may take advantage of the terms, if he so desires. The statement is sent out at stated intervals, usually the first of the month, to inform debtors of the amount of their accounts. It may, or may not, be a demand for immediate payment, depending on the circumstances of its use.

Invoices are made in a variety of sizes, planned according to individual taste, and the amount of matter to be placed upon them. They are usually printed on plain bond paper. Most of them are 8½ inches wide, and with a length suitable to their use.

Billheads are made 8½ inches wide, in four lengths—4⅔, 7, 9⅓ and 14 inches. They are line or ruled by ruling machines, with 2¾ inches of white space left at the top for printing. While these are generally used, some firms prefer to use unruled billheads cut from blank stock.

The standard statement is 5½ by 8½ inches in size, ruled in the same manner as the billheads, with blank space left at the head for printing. Other sizes are also used.

A common type of billhead is shown in Fig. 132. In this form ruled lines are provided, to be

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No._____ Winona, Minn.,_____191___

_____

_____

Bought of

Western Plumbing & Heating Company

748 North Wellington Street

*Terms*_____

Fig. 132.—Common form of billhead.

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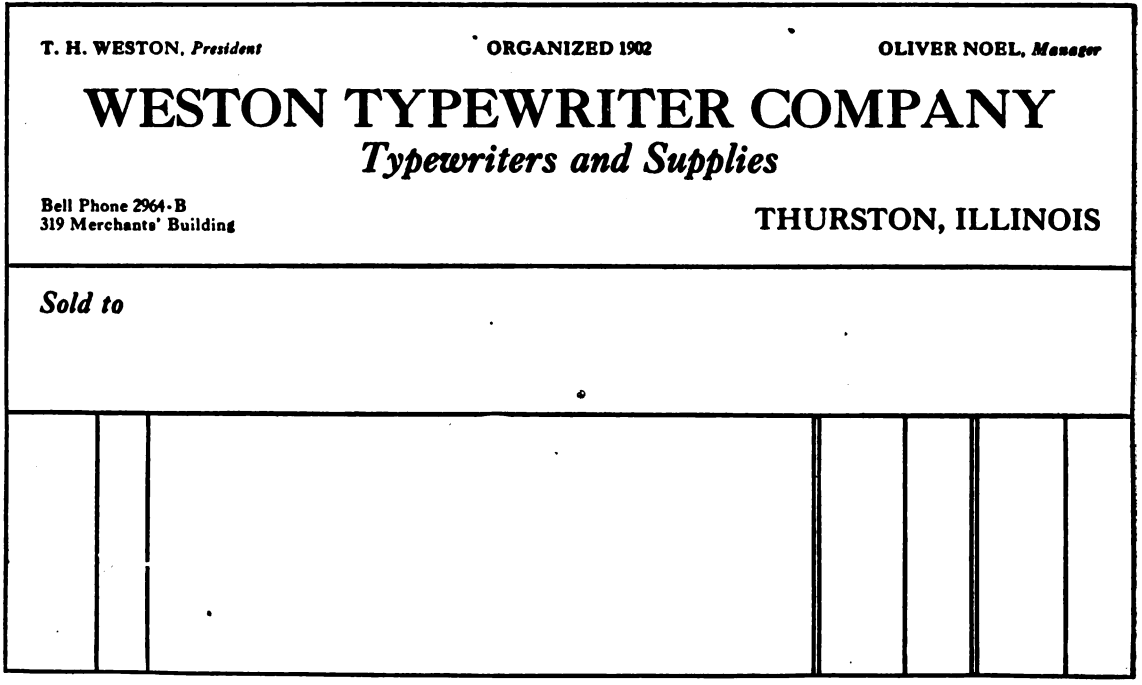

Fig. 133.—Style of billhead suitable for use in typewriter.

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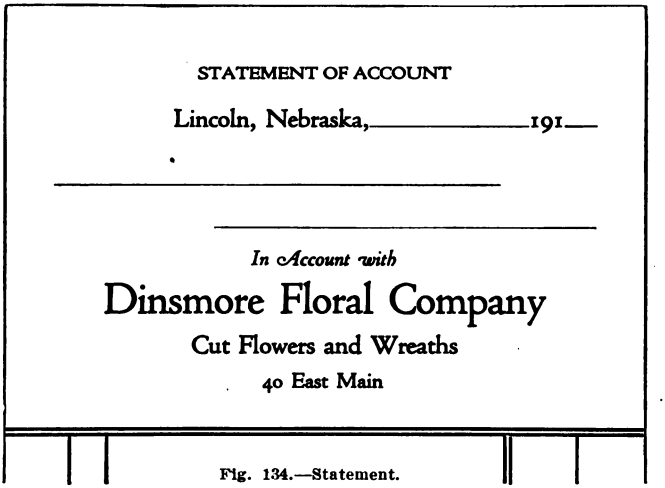
STATEMENT OF ACCOUNT

Lincoln, Nebraska,_____191__

_____

_____

In Account with

Dinsmore Floral Company

Cut Flowers and Wreaths

40 East Main

Fig. 134.—Statement.

filled in with pen. Another arrangement, that is probably used more generally, occurs in Fig. 133. In this the firm name appears first, and blank space is left below for the customer's name and address. This style is particularly suitable for typewriter work.

The copy for statements varies little from that of billheads, except the words "Monthly Statement," or "Statement of Account" usually appear. A typical form is reproduced in Fig. 134.

SUGGESTIONS FOR PRACTICAL SHOPWORK

It would be well to treat the subject of billheads, statements, and invoices as you did that of letterhead forms. Make original lay-outs of copy, and criticise such examples in actual use as may be obtained.

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CHAPTER XII

The Composition of Programs

The composition of programs offers a wide range of possibilities in display and ornamentation. As a rule, more elaborate treatment is expected in this line than in the printing of stationery forms.

While more ornamentation and free treatment is desirable, the use of ornament should be given very careful attention. A decorative design that would be appropriate for a picnic program would be out of place on a program for a musical recital. There are a great number of suitable ornaments furnished by type founders, many of which are especially appropriate for musical programs, as well as educational, athletic, religious, military, and similar ones.

Programs are made both in single sheet, and in folder form. When an initial or title page is used, it is subject to such treatment as the individual taste, or its use, will dictate. There is no conventional standard, either in size, shape or design. In fact, there is very little restriction, other than that the ornamentation and type style should be appropriate. The type face used should usually be of a more delicate and informal nature than that used in ordinary commercial printing.

In the program itself, the arrangement follows a little more conventional form, altho ample variation is afforded in the details of the design. Two representative styles of program forms are shown in Figs. 135 and 137.

Programs are frequently printed in two colors and also on colored or tinted stock. In choosing

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Program

Overture ---------- *Faust*
Benton Orchestra

President's Address of Welcome
Mr. John D. Brownell

The Loreley ---------- *Fr. Silcher*
Orchestra

Soprano Solo—Melodie ---------- *Debussy*
Miss Anna Bridge

Violin Solo—Meditation ---------- *Mietzke*
Mr. Arthur L. Mason

Contralto Solo—Bisea's Song . . *Foote*
Miss Carrie Leffel

Harp Solo—Concert Waltz . *Hassemann*
Miss Sarah Rhodes

As We Listen to the Band . . . *Medley*
Orchestra

Reading—The Little Witches . . *Hale*
Miss Helen Duncombe

Cornet Solo—La Gaite . . . *Moscheles*
Prof. King B. Seymour

Fig. 135.—Ordinary style of program composition. Use of hyphen and dot leaders is shown.

colors, a consideration of whether the program will be read in natural or artificial light, is important. An evening's program should not be printed with yellow or a very light tint, as the artificial light changes these colors almost to white, rendering them difficult to read.

When a menu and a program appear on opposite pages of a folder, the same general design

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THE NEW CENTURY CLUB

Menu

Chicken Salad
Potato Salad
Pea Soup

Cold Roast Beef, *with Jelly*
Cold Roast Spring Lamb
Veal Roast

Assorted Fruit
Imported Swiss Cheese
Ice Cream
Cake

Cigars

Fig. 136a.

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THE NEW CENTURY CLUB

Toasts

Toastmaster, William H. Kelly

"Better Highways for Alaska"
Hon. Sprague N. Wagner, of Yukon
Candidate for Federal Highway Commission

"The Fruits of Organized Work"
Judge H. S. Long, of Spokane

"Municipal Railways in Alaska"
Harry S. Singleton
President Western Transportation Co.

"Will Prosperity Continue?"
Walter Eldon Morse
Morse Manufacturing Company

"Federal Aid for Commerce"
Hon. John M. Stocker
United States Representative

"Co-operation for Results"
Milton Lindenmeyr
President Yukon Mining Company

Fig. 136b.

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Sacred Concert

Given by Members of the

First Christian Church

Sunday, May 15, 1918

✠

Program

Organ Prelude—Romance — Zitterbart

Anthem—Come, Let Us Worship — Hadyn

Solo—Palm Branches — Faure

Mrs. Martin

Scripture Reading and Prayer

Solo—Callest Thou, O Master — Lang

Mr. Whitmore

Male Quartette — Selected

Messrs. Wilson, Brown, Sharpe and Robinson

Anthem—Spread the Tidings — Clyde

Ladies' Trio—Rock of Ages — Swing

Misses Hellerman, Smith and Dawson

Anthem—Give Unto the Lord — Geyser

Offertory—Traumerei — Schumann

Solo—When a Light Surprises — Drake

Miss Brown

Anthem—I Will Arise — Perkins

Solo—The Lord is My Light — Miller

Mrs. Worthington

Hymn No. 254 — Congregation

Fig. 137.

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should characterize both pages. In Fig. 136, two pages of a folder are reproduced. These are quite simple in arrangement, but are very pleasing.

Programs for religious sevices should follow the accepted and time-honored style of religious printing. The proper letter for the display matter is the text-letter, or Old English, accompanied by such ornamentation as will be suggestive of the Gothic style of architecture and decoration. It has been mentioned before that this style of type and ornament has been used for ecclesiastical work from the very beginning. Old-style type, similar in form to the classic Roman, may also be used for this work, alone or in combination with the text-letter. Modern Roman should not be used with the text-letter, as it belongs to a later period—the latter part of the eighteenth century —and also by reason of its roundness and smoothness, it does not harmonize well with the angular Gothic characters.

The proper colors for religious programs are black and orange, because of their long continuous use. Black and orange, or green and red are used in Christmas and holiday printing. Green and violet are common for Easter.

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CHAPTER XIII

Composition of Cover and Title Pages

We will not lay down any definite rules for the designing of cover pages, other than those of harmony, proportion and propriety, as the cover page is a class of printing that is very little restricted. Nothing but the sense of propriety dictates that a cover design shall cover the entire page, a smaller group, or even a single line. The designer is comparatively free to establish the size and arrangement according to his taste.

The cover page is the first part of the book to draw the attention of the prospective reader, and for this reason it should be attractive, interesting and, in its general treatment, it should be indicative of the kind of matter to be found inside the book.

The preliminary sketch, or lay-out, is particularly important in the designing of cover pages. The stock on which it is to be printed should also be considered, for the design must be made according to the color of stock, and whether it is light or dark in value. The value of simplicity in design is nowhere more important than on the cover of a catalog or book. In fact, in a great many printed covers, the design could be greatly improved by the process of elimination, removing useless elaboration and meaningless ornament. It will be well to refer to the two cover page examples (Figs. 58 and 59) in Chapter III of Part II.

Title pages will be found to vary greatly in the methods of treatment, but as a rule, they are more formal, and follow a general style in arrangement of the matter.

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Books of technical or scientific nature, also statistical reports, etc., should have formal, dignified title pages, without ornament. On the other hand, booklets representing pleasure resorts, novels, and works treated in an informal way, should have title pages of more informal nature. All capitals in plain Roman faces will be found most suitable for the former, and lower-case letters, or at least types that are less formal, should be used for the latter class of books.

The title page should be planned to harmonize with the pages which follow it. The type used should have the same characteristics as that of the text. Books in old-style type should have the title in old-style, and those in modern face should have title in modern face type.

Shape harmony, both in the groups of matter and in the individual type faces and ornaments, should be carefully adhered to in the designing of cover and title pages.

SUGGESTIONS FOR PRACTICAL SHOPWORK

In connection with the study of cover and title pages, a fair amount of original designing should be done, in lay-out form. Analysis of printed designs obtained from any source will also be helpful, with construction of new lay-outs wherever it is thought necessary.

Much interesting matter on title pages will be found in Title Pages—DeVinne, Oswald Publishing Co., New York.

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Hyman-Lowe's

Travelogues

XI—Italy

Fig. 138.—Cover page.

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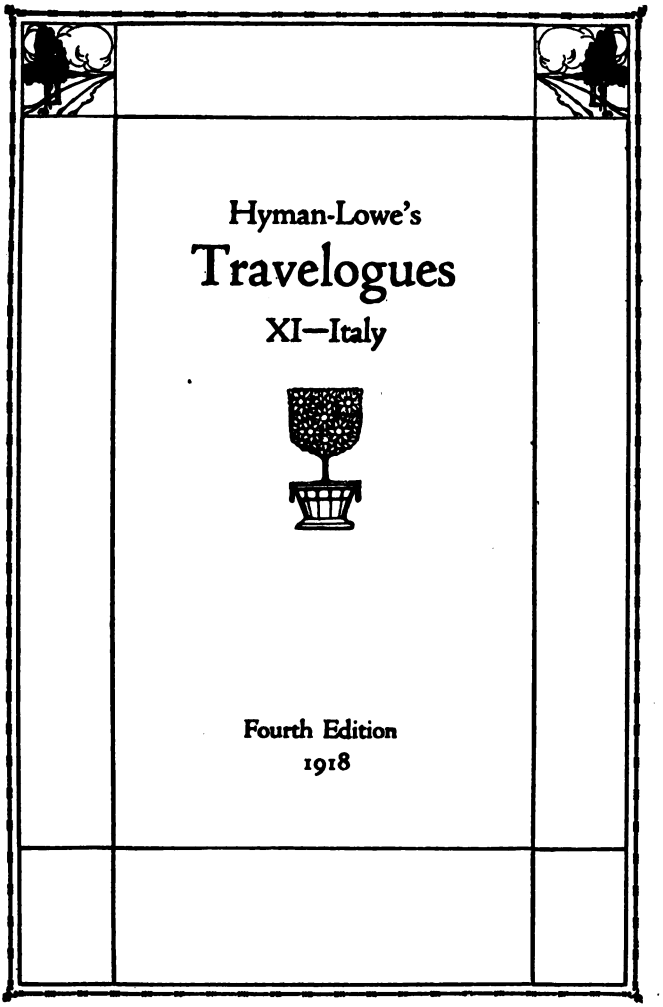

Fig. 139.—Title page.

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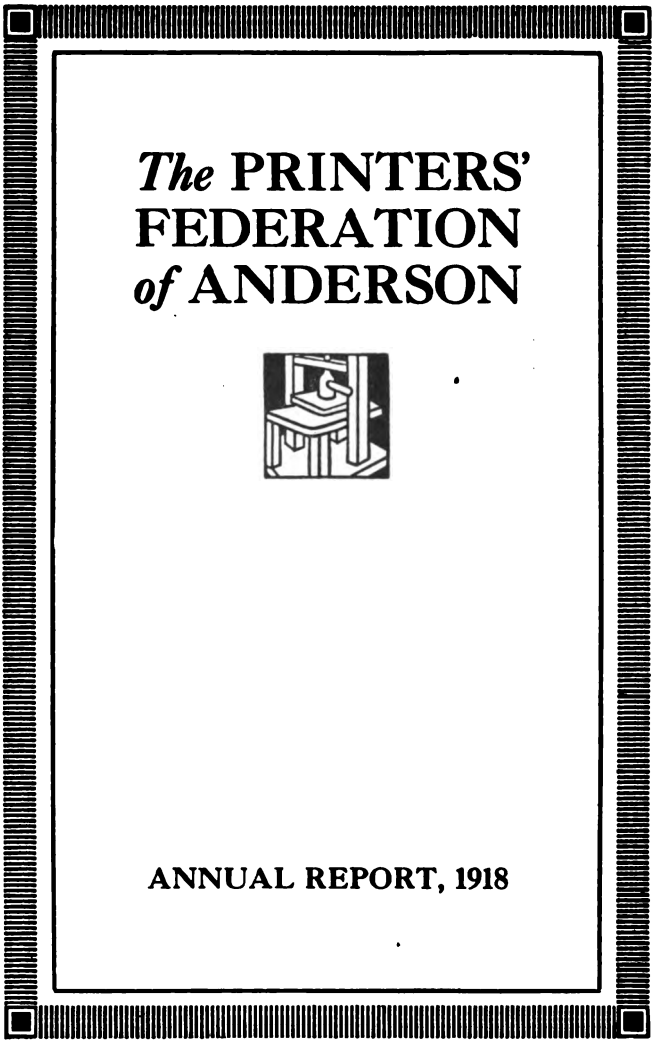

Fig. 140.—Cover page.

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THE PRINTERS' FEDERATION *of* ANDERSON

ANNUAL REPORT
***of* EXECUTIVE COMMITTEE**
& RECOMMENDATION
OF SECRETARY

ANDERSON, INDIANA
Printed by Order of the Executive Committee

Fig. 141.—Title page.

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CHAPTER XIV

The Composition of Books

The earliest efforts in the "Art Preservative" were spent in the making of books, and indeed this was the principal work of many of the fathers of typography. So well did they do their work that the general style and make-up of books today is governed by the art principles practiced by the early Italian master-printers. A reproduction from a book printed by Nicholas Jenson, of Venice, in 1479, is shown in Fig. 142. Note the intricate work, and the pleasing margins, in this early Latin book.

Two general rules might be made for margins of white space around the type forms of the pages. When the margins are narrow, it is best to place the forms almost in the center of the pages, but when the margins are ample, the most pleasing margins are those made by placing the forms above the center, and also nearer the inside of the book, so that the space will be proportioned on a basis of two to three each way. Fig. 143 illustrates this method.

In early times, the sizes of books were known by the number of folds to the sheets of paper, about 18 by 24 inches in size, used in the making. Thus a sheet folded once, making four pages 12 by 18 inches, was called a folio; one folded twice, making eight pages 9 by 12 inches, was a quarto; and one folded three times, making sixteen pages 6 by 9 inches, was known as an octavo.

In the United States today, a duodecimo (12mo) book is $5\frac{1}{3}$ by $7\frac{2}{3}$ inches in size, the term in this

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case meaning that the book is made up of sheets of either twelve or twenty-four pages each. The size of paper on which twenty-four page forms are usually printed is 24 by 42 inches. The sizes of duodecimo books often vary somewhat from the dimensions given above. A book printed in sixteen-page signatures is called an octavo (8vo.)

The descriptive names of the sizes of books refer to the sizes of the leaves, and in each case they originated from the number of leaves into which a sheet of paper was folded after printing. Paper is now supplied in many sizes of sheets, and the sizes of books vary accordingly. The book, when bound, is named according to the nearest size of the original sheets so designated.

The different sections, or parts, of a book, in the order of their sequence, are as follows:

Front fly-leaf, blank.
*Half-title.
*Title page, backed by blank page, or copyright notice.
*Dedication.
*Preface.
*Contents.
*List of Illustrations.
*Text.
Appendix.
Glossary.
Index.

All parts starred should begin on right-hand pages of the book.

The various sections of a book should be set in the same series of type. It is customary to set the contents, list of illustrations and index in a size smaller than that used in the body of the book.

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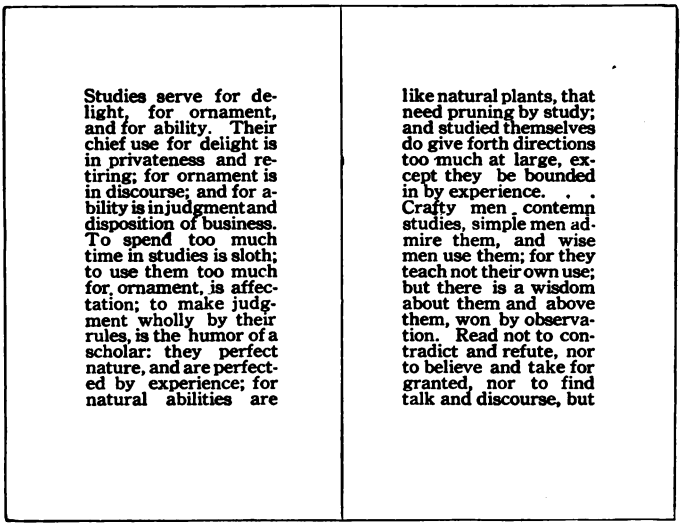

Fig. 143.—Example of balanced page margins.

Chapter headings are usually set in capitals of the type used for the text, unless they are unusually short, in which case it is common to use one size larger than the text.

Running-heads are used in many books, but they are not essential. Specimens appear in Fig. 144. If running heads are used, space should be left between them and the text approximate to a line of the text. Full-page cuts or diagrams, and pages containing chapter heads, do not require running-heads.

In the printing of catalogs and booklets, the above rules are often sacrificed for the sake of individuality and striking effects. In some cases, the results are most pleasing, but the rules should not be disregarded without a specific reason.

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No hard-and-fast laws can be laid down for the planning of catalogs. Each must be made an individual problem, and features introduced accord-

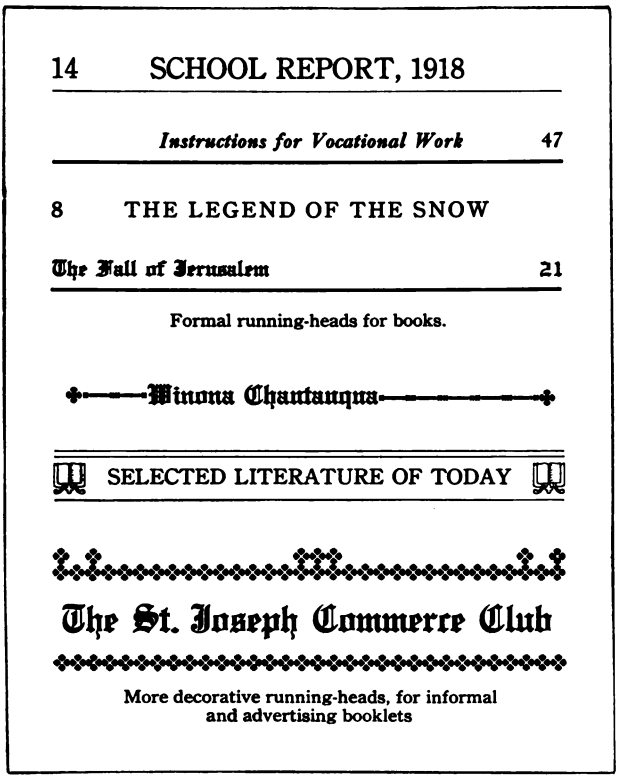

Fig. 144.

ing to the nature of the commodity to be sold. If long descriptions are necessary, making a good deal of matter to each page, the margins should be relatively small, and the matter should be arranged in such a way as to preserve the

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COMPARATIVE TABLE OF TYPE SIZES

Figures are on a basis of 1000 ems of solid composition. To the right of the heavy faced figures is shown the gain in ems resulting in the use of smaller types in the same space. The decrease in number of ems by the use of larger sizes is shown at the left.

1000 Ems	12 point	10 point	8 point	6 point
12 point	1000	1440	2250	4000
10 point	694	1000	1563	2778
8 point	444	640	1000	1778
6 point	250	360	563	1000

WORDS PER SQUARE INCH

Table of figures for different sizes of body type set solid, and leaded with two-point leads

Square Inches	6 pt. Solid	6 pt. Leaded	8 pt. Solid	8 pt. Leaded	10 pt. Solid	10 pt. Leaded	12 pt. Solid	12 pt. Leaded
1	47	34	32	23	21	16	14	11
2	94	68	64	46	42	32	28	22
4	188	136	128	92	84	64	56	44
8	376	272	256	184	168	128	112	88
12	564	408	384	276	252	192	168	132
16	752	544	512	368	336	256	224	176
20	940	680	640	460	420	320	280	220
24	1128	816	768	552	504	384	336	264
32	1504	1088	1024	736	672	512	448	352

Fig. 145.—Handy tables for reckoning the amount of copy to a given space.

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simplicity and legibility of the page. If large illustrations are used, with a small amount of copy, generous margins will give the most pleasing effect. Pages listing miscellaneous tools may contain a number of separate descriptions to a page without decreasing the effectiveness, but in case of pianos, autos or other large articles in which quality is paramount, but one model should appear on a page. Thus, each catalog must be designed individually, with due consideration for the specific appeal it is to make.

Care should be taken to avoid over-display or superfluous decoration, which always tends to weaken the force of the argument by attracting too much attention to itself. Dignity should be striven for, rather than originality or eccentricity.

The size of type face selected should be in proportion to the size of the page, ten point being about the correct size for ordinary pages. It can be increased to 12 or 14 point when the pages are larger.

In selecting paper stock for a catalog, the character of the type and cuts to be used should be considered. Type faces with hairline elements do not print to best advantage on enameled stock. The extent of handling to which the book will be subjected, and the class of people to whom it is intended to appeal, should be additional considerations. Fine half-tones demand highly coated stock, but when type only, or type and line engravings are used, a dull, soft finish stock is more suitable for most uses, being easier to read and richer in general appearance. White stock is nearly always preferable for catalog use, unless a particular tint gives added significance.

Reference: Chapter IV, Modern Book Composition—DeVinne, Oswald Publishing Co., New York.

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PART IV

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CHAPTER I

The Alphabet, and Lettering

It is interesting to note that all the characters of the English alphabet can be traced back to the hieroglyphic picture-writing of the Egyptian priests, probably six thousand years before the birth of Christ. Not only can suggestions of the original objects be seen, but in a number of cases the letter today has the same sound value as that of the original.

We may see this plainly in the evolution of the letter L. The original of this letter is the figure of a crouching lion, called by the Egyptians, Labu. The English word, Lion, is derived from this word, thru the Greek and Latin. The ancient priests used the picture of the lion in inscriptions on their monuments and very formal writings, but for other purposes, it was "abbreviated," or simplified into a downward stroke which made an acute angle with a double-curved line representing the animal's fore and hind legs. Later, the Phenicians straightened out the curve and formed the letter like our Italic *L*, but with a more acute angle. This they called Lamedh. It developed in the Greek letter Lambda (Λ), a character retaining the same angle, but turned like an inverted V. From this form came the Roman L, from which the modern letter is patterned.

The descent of our English alphabet is easily traced from Egypt thru Phenicia to Greece, then to Naples, which was colonized by the Greeks and thru them it was introduced into Italy. There is so little difference between the English capital letters and those used in Italy 2500 years ago that

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they may be said to be the same. Early English type founders followed the Italian forms of the letters, varying only in the details of the designs, as to relative density of the elements, curves, slopes, etc.

A knowledge of the origin and characteristics of the various styles of lettering is very important to the student of typography. In Fig. 146, the evolution of the letter forms is shown. The objects from which the Phenician letters were named are given in the first column. In the second, the Phenician letter forms and their names are given. Following this is the column of Greek letters. In the last six columns various styles of the English alphabet appear, almost in chronological order. Greek letters having no English equivalent are inserted in open spaces at the bottom of the third column.

There are four general classes of English letters, known as Roman, Italic, Gothic (commonly called Old English or Text), and Block Letter (generally designated by printers and founders as "Gothic").

The capitals of the Roman types (a) are practically the same as the lettering used by the Latin scribes in early manuscripts, and by stone-cutters on memorial inscriptions. The lower-case letters, of later origin, are more informal, and more legible in masses. Roman letters may be subdivided into two classes—old-style and modern-face. The general points of difference between these two classes may be seen readily in Fig. 146.

The Italic style of lettering (b), originated as a letter that could be more rapidly and easily drawn, is used largely in connection with Roman faces of the same series. It was designed originally with lighter elements than the Roman, and for this reason it was not used in lines that were all

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Comparative Table of Alphabets

Symbol of Phœnician Letter	Phœnician	Classic Greek	Uncial	Early Manuscript	Gothic	Oldstyle Roman	Modern Roman	Italic
Ox	Aleph	A Alpha	𝔄	𝔄	𝔄	Aa	Aa	*Aa*
House	Beth	B Beta	𝔅	𝔅	𝔅	Bb	Bb	*Bb*
			ℭ	𝔠	ℭ	Cc	Cc	*Cc*
Door	Daleth	Δ Delta	𝔇	𝔇	𝔇	Dd	Dd	*Dd*
Window	He	E Epsilon	𝔈	𝔈	𝔈	Ee	Ee	*Ee*
Hook	Vau	(Digamma)	𝔉	𝔉	𝔉	Ff	Ff	*Ff*
Camel	Gimel	Γ Gamma	𝔊	𝔊	𝔊	Gg	Gg	*Gg*
Fence	Cheth	H Eta	ℌ	𝔥	𝔥	Hh	Hh	*Hh*
Jot	Yodh	I Iota	ℑ	𝔦	𝔍	Ii	Ii	*Ii*
			𝔍	𝔧	𝔧	Jj	Jj	*Jj*
Hand	Kaph	K Kappa	𝔎	𝔨	𝔨	Kk	Kk	*Kk*
Lion	Lamedh	Λ Lambda	𝔏	𝔩	𝔩	Ll	Ll	*Ll*
Waters	Mem	M Mu	𝔐	𝔪	𝔪	Mm	Mm	*Mm*
Fish	Nun	N Nu	𝔑	𝔫	𝔫	Nn	Nn	*Nn*
Eye	Ayin	O Omicron	𝔒	𝔬	𝔬	Oo	Oo	*Oo*
Mouth	Pe	Π Pi	𝔓	𝔭	𝔭	Pp	Pp	*Pp*
Knot	Qoph	(Koppa)	𝔔	𝔮	𝔮	Qq	Qq	*Qq*
Head	Resh	P Rho	ℜ	𝔯	𝔯	Rr	Rr	*Rr*
Teeth	Shin	Σ Sigma	𝔖	𝔰	𝔰	Ss	Ss	*Ss*
Cross	Tav	T Tau	𝔗	𝔱	𝔱	Tt	Tt	*Tt*
		Υ Upsilon	𝔘	𝔲	𝔲	Uu	Uu	*Uu*
		(Z Θ)	𝔙	𝔳	𝔳	Vv	Vv	*Vv*
		(Φ X)	𝔚	𝔴	𝔴	Ww	Ww	*Ww*
Post	Samekh	Ξ Xi	𝔛	𝔵	𝔵	Xx	Xx	*Xx*
		(Ψ Ω)	𝔜	𝔶	𝔶	Yy	Yy	*Yy*
Sickle	Zayin	(San)	ℨ	𝔷	𝔷	Zz	Zz	*Zz*

Fig. 146.

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capitals. Italic is designed in both old-style and modern-face.

The Gothic letter (c) was used in the making of early manuscripts (in a style very similar to the letters shown in column five of Fig. 146), as well as the first printed books. It exists today in a number of pleasing type series, usually called Old English or Text.

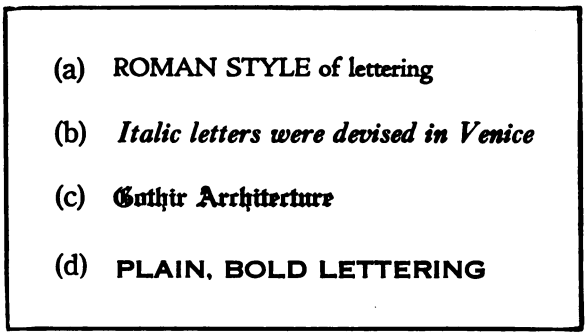

Fig. 147.

Block letter (d) is used in printing where plain, bold letters are desired, and often in the composition of professional stationery. This letter, without serifs or hair-lines, is listed quite generally as "Gothic," although the name is misleading, and without a logical foundation. Some English founders call it Sans-serif. It is most commonly found in capitals only. The student may expect to find this style of type labeled "Gothic" in most printing plants, but he will bear in mind that it has no connection with the Gothic style of art or architecture.

The practice of using hand-lettered designs in good printing is rather common, and a knowledge of letter construction is valuable to those who

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Fig. 148.—Type form.

Fig. 149.—Type form.

Fig. 150.—Hand-lettered.

Fig. 151.—Hand-lettered.

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would be typographers. There are some advantages in original drawings that are not always to be found in the stiff, inflexible type. They offer greater possibilities for decorative treatment and individuality in design, and, being more flexible, give greater latitude in the arrangement and grouping of the matter. This will be seen in the accompanying figures. Figs. 148 and 149 show two arrangements, in type, of a group of words, neither of which create interest. Following the style of the latter, Fig. 150 is hand-lettered, relieving the artificial effect, and the wide spacing of the second line. If more individuality is desired, lettering similar to Fig. 151 may be drawn. Many other advantages are to be found in the use of artistic hand-lettering.

When lettering a piece of work, it is necessary to present the subject in an appropriate manner. This necessitates, primarily, a proper style of letter, and an arrangement that is in keeping with this style.

It is neither necessary nor desirable to attempt to originate letter forms that will be different from existing ones. It is better to follow an appropriate letter form that has proved its worth. The letterer will, however, develop a certain style of lettering different from his pattern, as his personality becomes manifest in his product. This individuality is apparent in the work of all good designers, to the degree that many of their products may be recognized, even tho the name does not appear with the design.

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CHAPTER II

Roman Capitals

Roman capitals, it has been mentioned, were designed from the characters used by the Latin scribes and stone-cutters. Because of their uniformity of shape, and the uses to which they were originally put, they are considered formal letters, and for this reason they are used largely on work of a formal nature. Combined with lower-case letters, by way of capitalization, they fit pleasingly into more informal designs.

These letters were first made with a wide quill pen—the oldest actual writing implement known. The craftsmen who made the beautiful books just preceding the invention of printing had learned the thoro use of the pen, and it is to them that much credit is due for the classic style of the early alphabet, very nearly the same form in which it appears today. The early letters were written—not drawn—and this accounts for the light and the heavy strokes, or elements, of the letters as they appear today.

In the distribution of these elements, it will be seen that all the vertical lines are heavy, except in M, N, and U. The light vertical elements in these letters were made with the upward stroke of the pen. All horizontal lines, and all lines sloping upward from left to right (except in Z) are light. Lines sloping downward from left to right are heavy, being made with a downward stroke of the pen.

The serifs were first added to the letters by stone-cutters. They were accepted as a necessary

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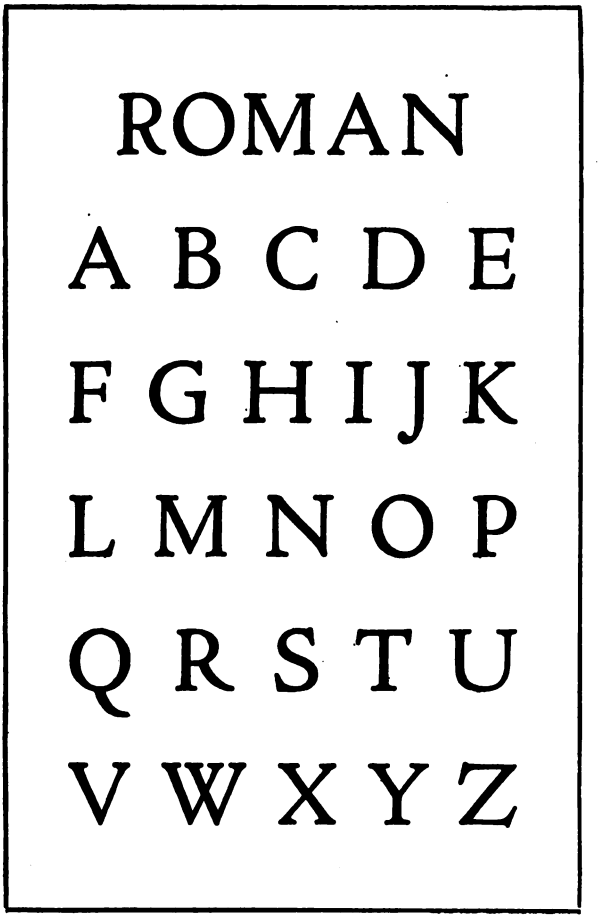

Fig. 152.—Roman capitals.

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part of their construction, and they now appear on all except block letters.

On account of an optical illusion, the points of the letters A, M, N, V, and W should extend slightly beyond the limits of the other letters.

While no hard-and-fast rules for proportions of the letters can be applied to hand-lettering, it is unwise for the beginner to digress widely from accepted standards. The proportion of the width to the height of the heavy elements may vary somewhat according to the desired weight, or tone, of the letters. A common proportion is 1:8, that is with the width one-eighth of the height. A pleasing weight for the light elements is two-fifths or one-half that of the heavy elements.

The widths of the letters may also vary slightly, when found necessary, but they should be kept in about such proportion to one another as that given in Fig. 154. In this figure, the percentage of the width to the height is given below each letter, for standard Roman capitals.

Each student should draw the alphabet shown in Fig. 152. Heavy ledger, or suitable hard finish drawing paper should be used for this purpose, the sheet being about 9 by 12 inches in size. The construction lines, as indicated in Fig. 153, should first be drawn lightly in pencil.

Then draw the letters in pencil, as indicated in this figure. To space the letters to a given dimension, first mark them in lightly, in rough outline, as you wish them placed. Then, working with a free hand, mark in lightly the general shape of the letters, until each has been satisfactorily formed.

After the letters have been completed in pencil, remove the superfluous construction lines,

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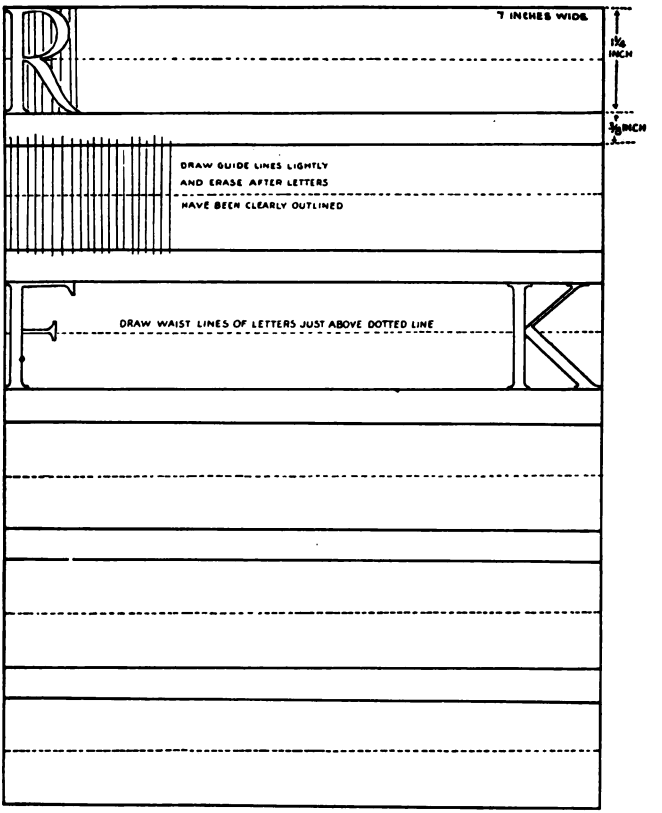

Fig. 153.

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leaving only the outlined letters and the penciled guide lines.

After the alphabet in pencil is satisfactorily made, the plate is ready to be inked in. This should be done with pen and India ink, beginning in the center of the elements and working out to the pencil lines. Great care should be taken to keep the elements of uniform weight.

After the letters have been inked in, and the ink is thoroly dry, all pencil lines should be erased, leaving only the finished alphabet.

Comparative Widths of Roman Capitals

A	B	C	D	E	F	G	H	I
.84	.80	.89	.87	.78	.74	.91	.80	.17
J	K	L	M	N	O	P	Q	R
.64	.84	.75	.92	.71	.96	.77	.96	.81
S	T	U	V	W	X	Y	Z	.
.80	.90	.73	.81	1.25	.87	.86	.84	.20

The figures indicate the percentage of the widths to the height of the letters.

Fig. 154.

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CHAPTER III

Roman Lower-Case

Lower-case letters came into being thru the necessity for the printing of body matter in a more legible style of lettering. Capitals, altho handsome and attractive because of their uniformity, cannot be read with ease. Their use in writing was very slow and tedious, also, for they could not be formed readily with pen.

The small, or lower-case letters were devised first in 789. They were derived from the capitals and from the Greek small letters, or half-uncials. After undergoing a number of changes, they were developed into their present form in the fifteenth century.

The best examples of lower-case letters will be found to vary but slightly in their proportions and in the details of construction. The average proportion of width to height of the letters n and u is 4:5, which is approximately the same as that of the capital letter H, in the preceding chapter. A table of comparative widths of lower-case letters is given in Fig. 156.

The heavy elements of the lower-case letters should be somewhat lighter than the heavy elements of the capitals, because of the inferior height of the former. Probably the most pleasing weight of the lower-case stems, when the letters are used with capitals whose proportion is 1:8, is that of 1:10.

The height of the letters to be drawn according to the diagram in Fig. 157, is one-half, or fifty per cent of the height of the capitals. The

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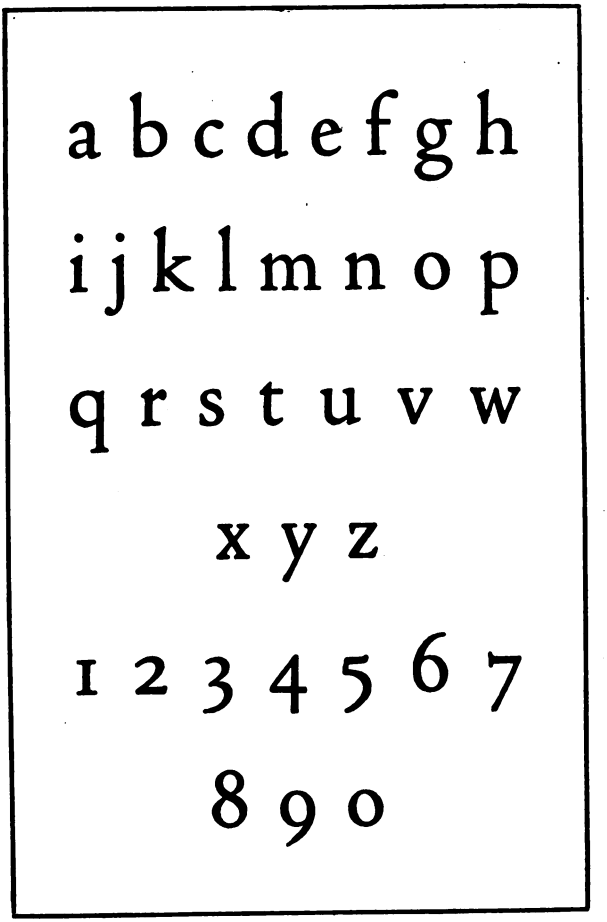

Fig. 155.—Roman lower-case.

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lower-case letters in general use will be found to vary from fifty to sixty per cent of the height of the capitals.

Fig. 155 is an alphabet of lower-case with figures, which is to be drawn by the student. For this plate, the paper should be ruled as is indicated in Fig. 157. The space from cap line to cap line is first divided into thirds. The upper third is then divided in the middle to establish a guide for the letter t. The middle third is for the body of the letters, and the lower third is subdivided by a line defining the lower limits of the descending letters, and the space between lines.

This plate will be drawn in pencil, in the same manner as the one in the preceding chapter. When it is completed in pencil, it should be inked in and finished the same as the capitals.

Comparative Widths of Lower-Case Letters

a	b	c	d	e	f	g	h	i
.49	.56	.54	.56	.56	.40	.49	.50	.10
j	k	l	m	n	o	p	q	r
.42	.53	.10	.89	.50	.59	.56	.56	.42
s	t	u	v	w	x	y	z	.
.47	.28	.50	.48	.79	.50	.50	.50	.20

The figures indicate the percentage of the widths to the height of the letters.

Fig. 156.

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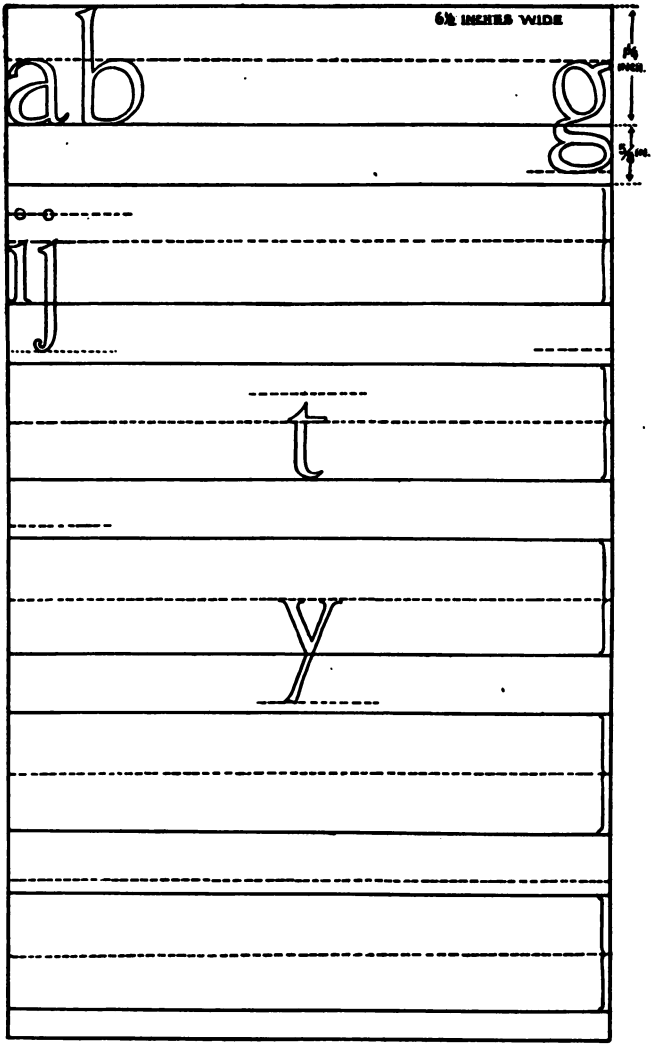

Fig. 157.

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CHAPTER IV

Italic Letters

Italic, with only minor differences, is Roman lettering drawn in slanting form. It was first designed by early typographers of Venice, supposedly patterned after the handwriting of Petrarch. The Italic style of lettering was first known as Venetian.

Only the lower-case letters were made at first, and these were used with the Roman capitals, but later slanting capitals, with lighter elements, were made to complete the Italic characters. This form of lettering is informal and graceful. When used in moderation with Roman capitals, it relieves the effects of monotony and stiffness made by the use of capitals alone, and adds interest to the page. Italic is not as legible as Roman lower-case, and so should not be used in large groups. Its capitals were not designed originally for use alone, and they were used only to capitalize words in lower-case letters.

There is no fixed rule for the amount of slope for Italic letters. Many styles in general use are constructed on angles which vary from twelve to thirty degrees. Some authorities give twenty-one degrees as the most pleasing angle for the slant of the letters.

In the construction of the letters shown in Fig. 158, the guide lines indicated in Fig. 159 should be followed. Slanting guide lines must be added, to obtain a uniform slope of the letters. A good method for drawing these slanting lines is to fasten the paper on the drawing board obliquely, so that the T-square will cross at the

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desired angle, drawing the lines with pencil and T-square. The paper can then be reset to the former position.

Fig. 158.

The Italic letters should be drawn in outline, in pencil, and should then be inked in and finished according to methods employed with previous plates of letters.

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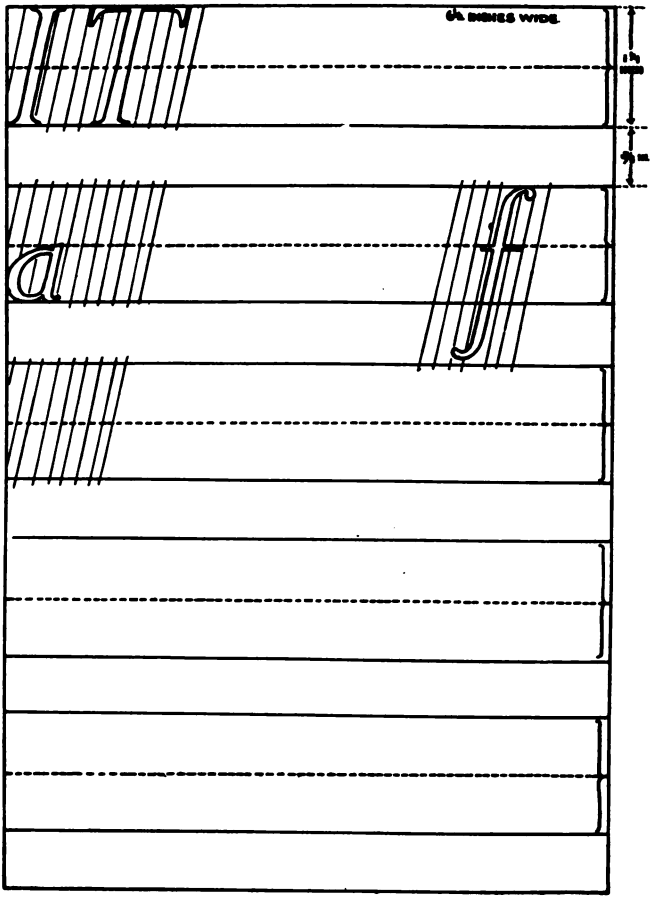

Fig. 159.

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CHAPTER V

Gothic Letters

The Gothic letter—the style used in the early ecclesiastical manuscripts and in the printing of the early books—is a development of the ancient Roman characters along the lines of the Gothic style of ornamentation, as used by the early Church. It existed first in lower-case letters only, these being used in conjunction with the Uncial initial letters. This method is illustrated in Fig. 160, a reproduction of a portion of an early manuscript. The Gothic capitals were gradually developed from the Uncial forms. Today, the use of either Gothic Capitals or Uncial letters is permissible with Gothic lower-case.

Fig. 160.

A number of styles of Gothic lettering are used today, under the names of Old English and Text. The particular style we shall draw (Fig. 161) is the early Black-Letter, very similar in formation to the style of the first movable types for printing. The guide lines, and the method of forming the lower-case letters, is shown in Fig. 162.

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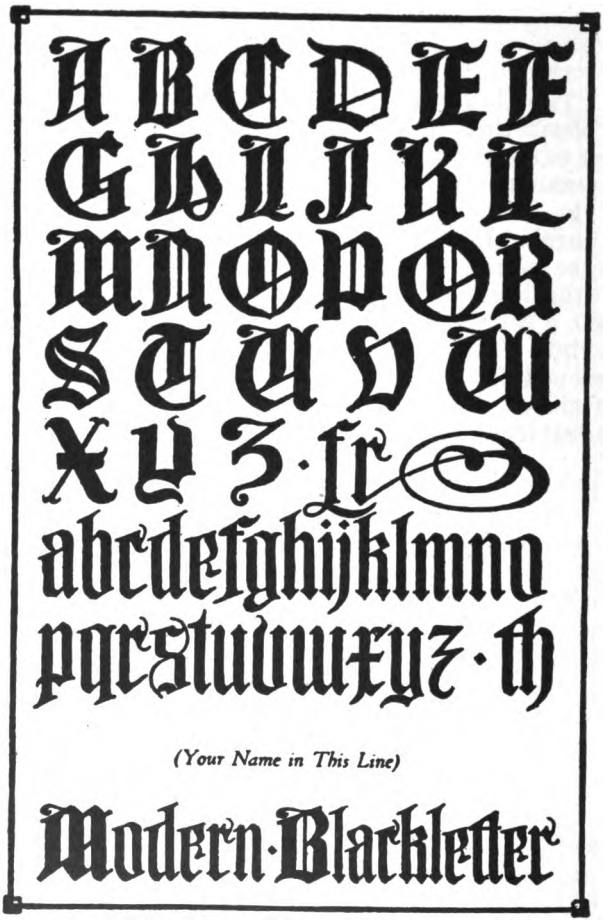

Fig. 161.

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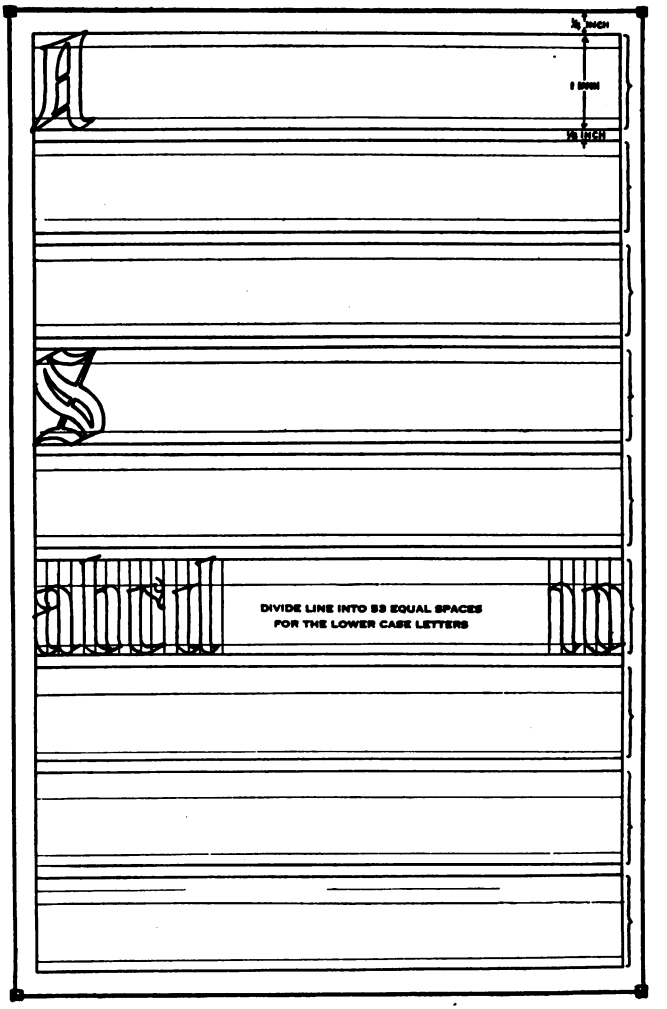

Fig. 162.

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CHAPTER VI

Hand-Lettering in Design

One of the first things to be decided, in the lettering of a design, is the style of letter to be used. This will, of course, depend largely upon the nature of the work in hand. Whether it shall be Roman, Italic or Gothic, light or heavy in tone, or large or small letters, must be decided before the design is started.

After the choice of letter has been made, the size for the drawing must be considered. This will depend upon the size of the finished product, and the method of the designer. While some designers make their drawings a very little larger than they are to be reproduced, the usual method is to make them at least one-third or one-half larger than the finished size desired. In every case, the dimensions of the original drawing must be in exact proportion to those desired in the reproduction of it.

The principles of balance, proportion, and shape harmony must be applied to hand-lettered design as well as to the mechanical designing of the composing room. In fact, the value of the design will depend very largely upon a rigid application of all principles previously studied.

Hand-drawn borders and ornamentation should be introduced with regard to relevance to the nature of the work, and harmony with the letter style used. All decorations should be conventionalized, or simplified to a flat surface, with no attempt at showing shadow or perspective. Fig. 163 gives a few suggestions for the designing of hand-drawn borders.

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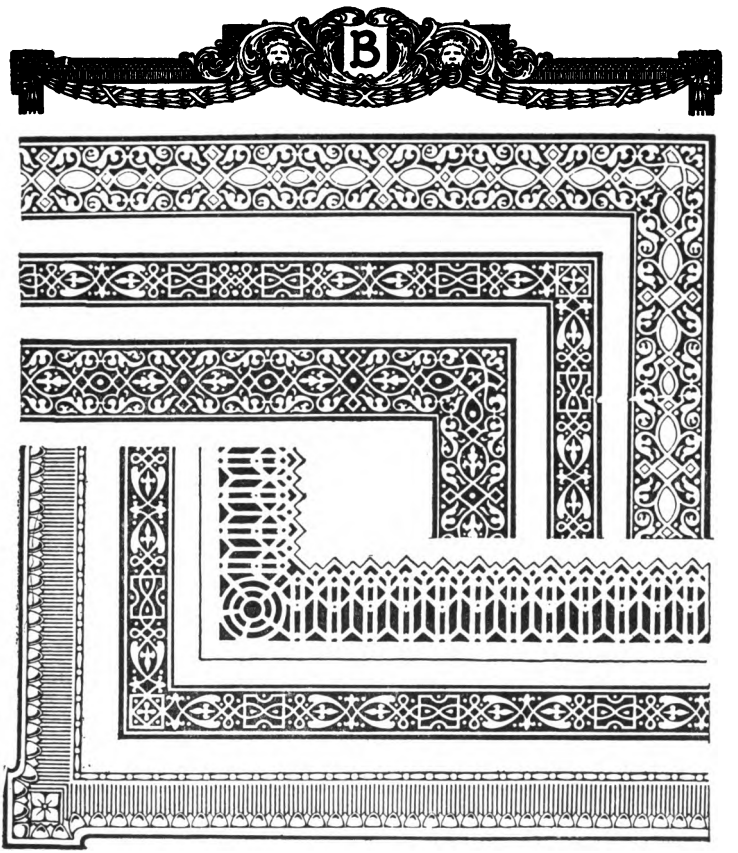

Fig. 163.—Specimens of hand-drawn borders.

In designing an elaborate border of repeating units, it is often much easier to draw one section and obtain a plate from it, and then to paste up duplicate proofs to serve as the completed copy. Also, when the border around a form is to be alike on both sides, much time and work may be saved by drawing one side, and having the engraver reverse the copy, for the other side.

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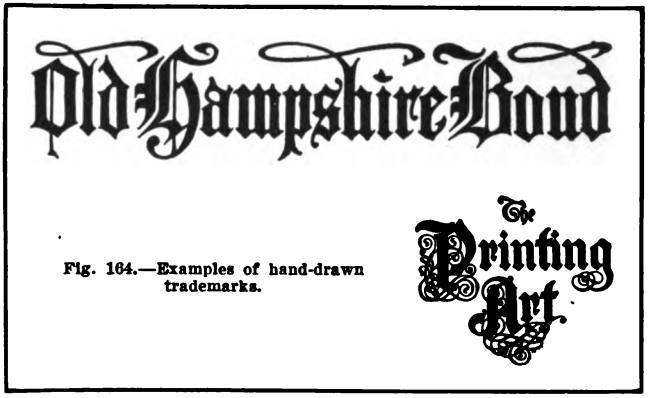

Fig. 164.—Examples of hand-drawn trademarks.

After a drawing has been inked in, and the construction lines erased, it should be inspected carefully, and any spots which appear gray, from erasure or too little ink, should be touched up to full color. Failure to do this may cause breaks to appear in the design as it is reproduced, as light gray lines or spots may be photographed on the plate as white.

A few reproductions of hand-lettered designs appear in this chapter. These offer a number of suggestions to the student.

Fig. 165.—Hand-lettered business card.

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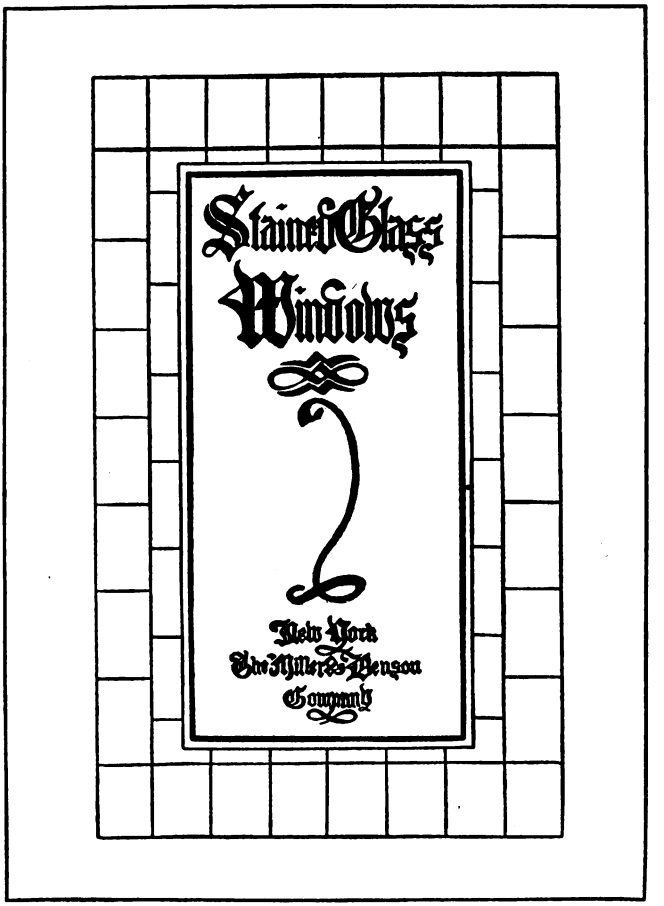

Fig. 166.—Hand-lettered title page design.

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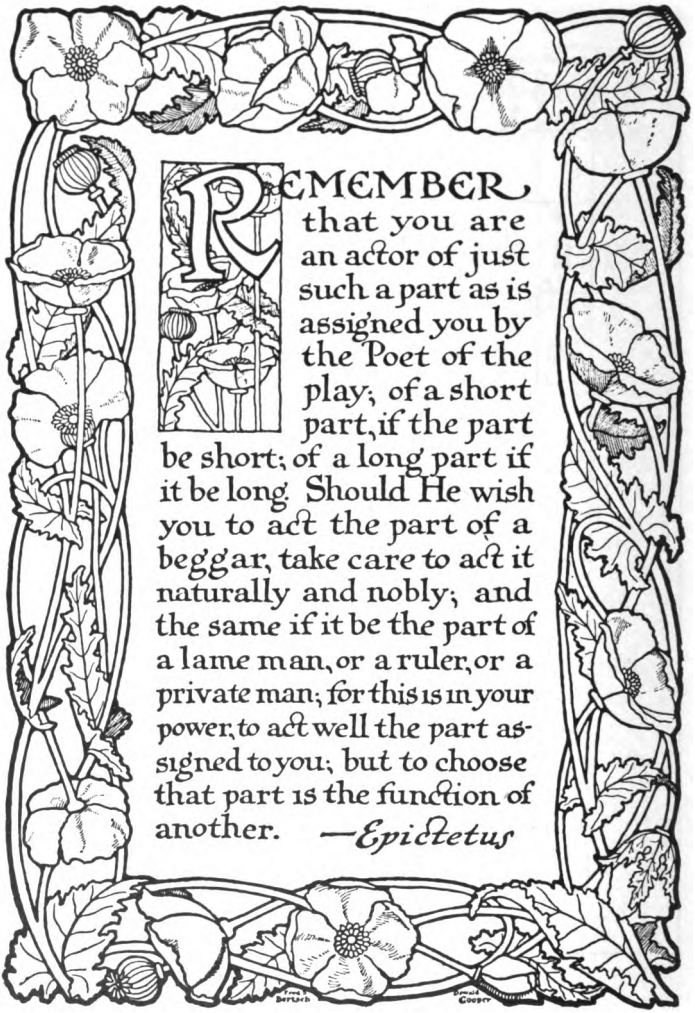

Fig. 167.—Hand-lettered motto design.

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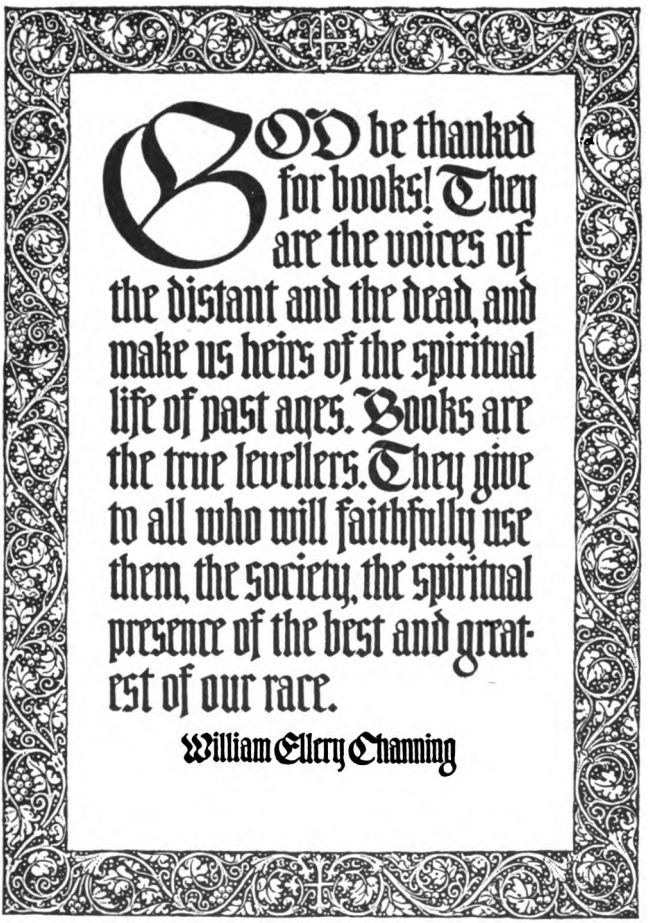

Fig. 168.—Motto in Gothic style of lettering.

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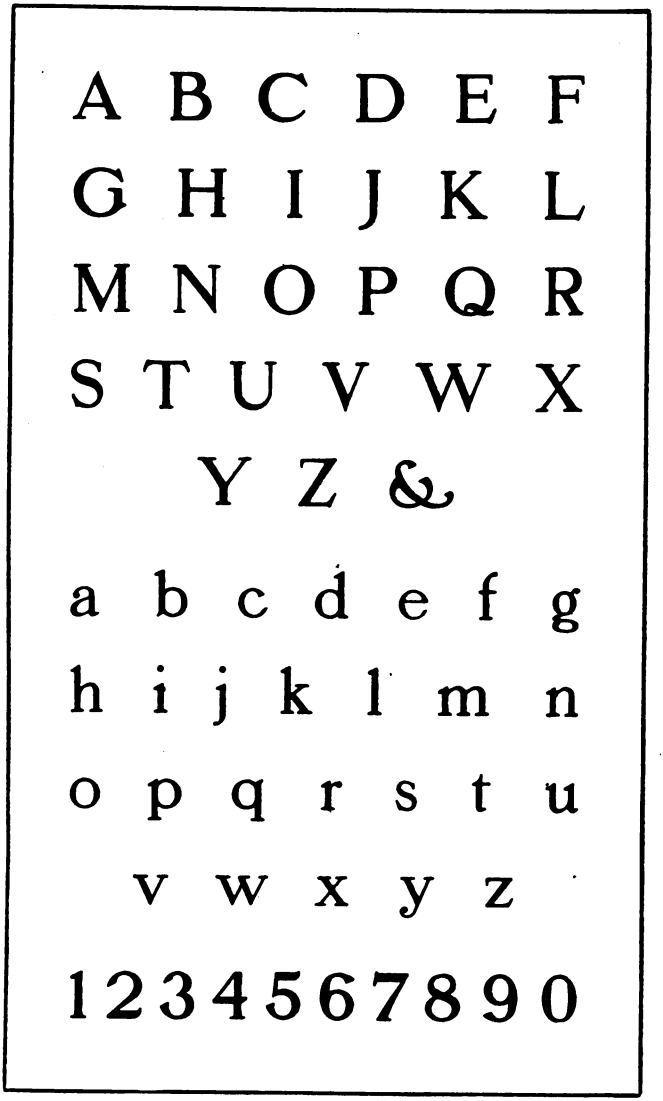

169.—Strathmore Oldstyle Type.

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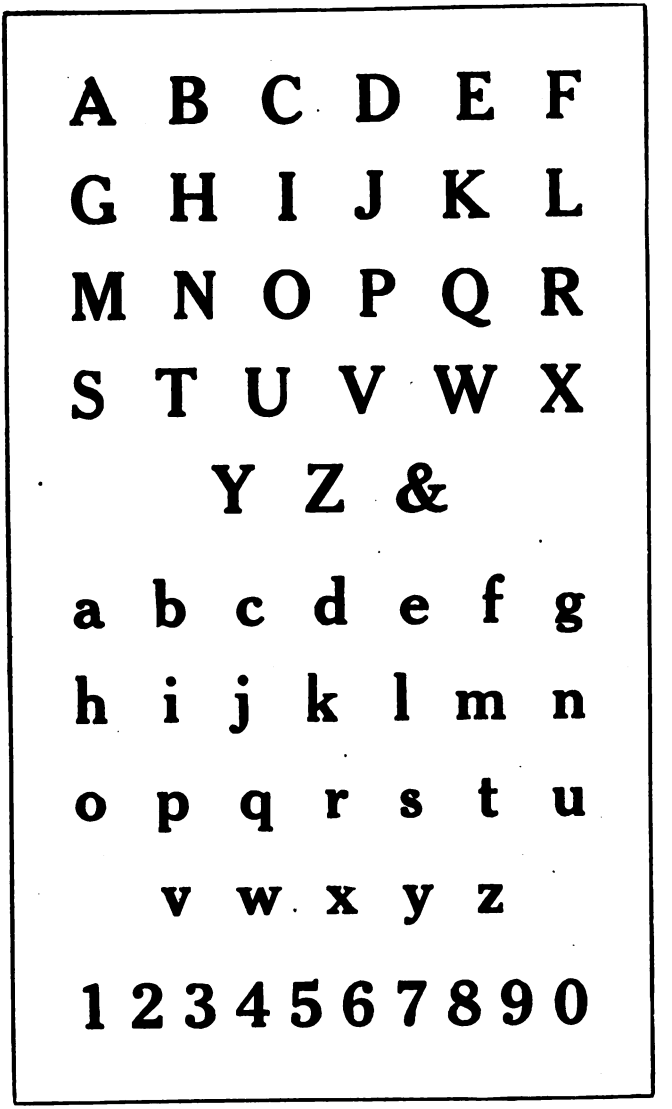

Fig. 170.—Cheltenham, an Old-Style Letter.

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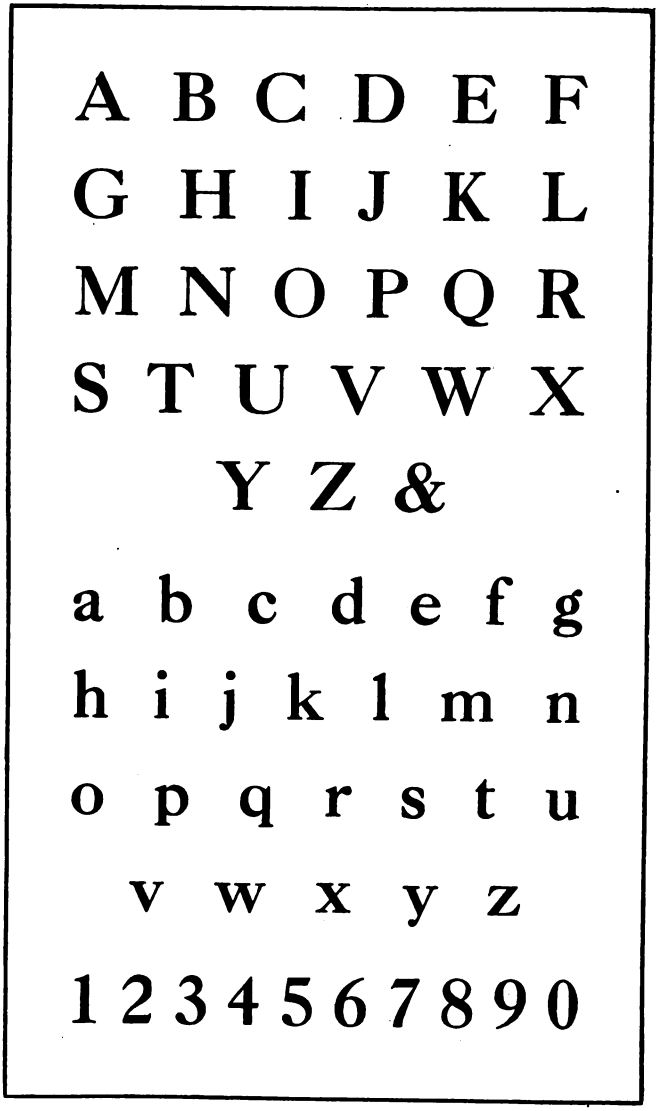

Fig. 171.—New Caslon, a Modern Type.

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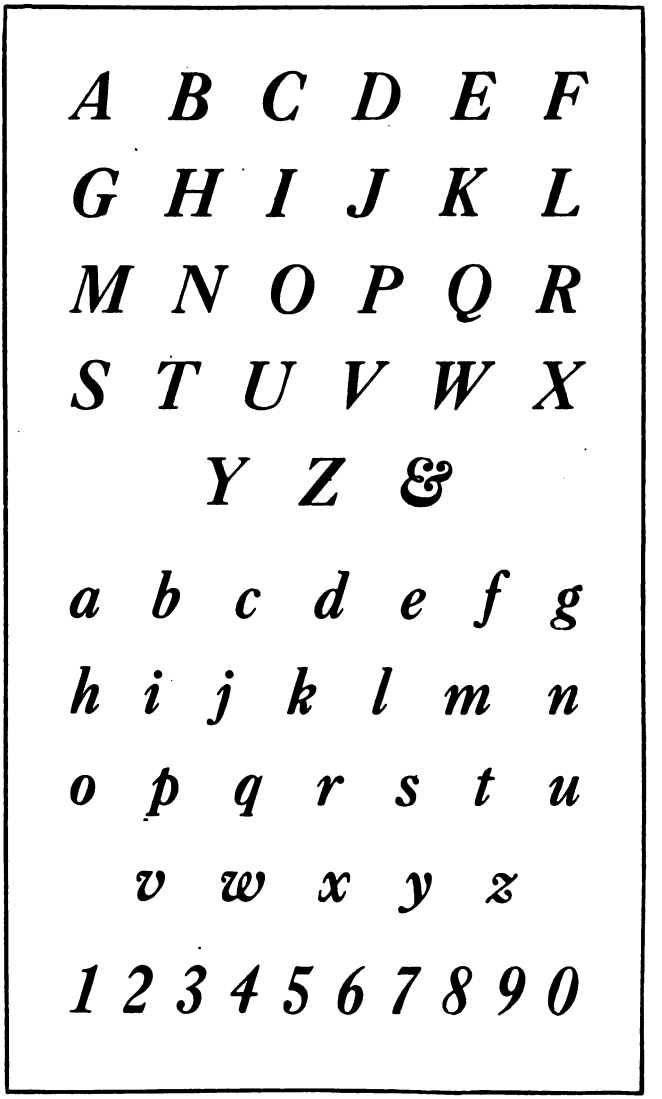

Fig. 172.—New Caslon Italic Type.

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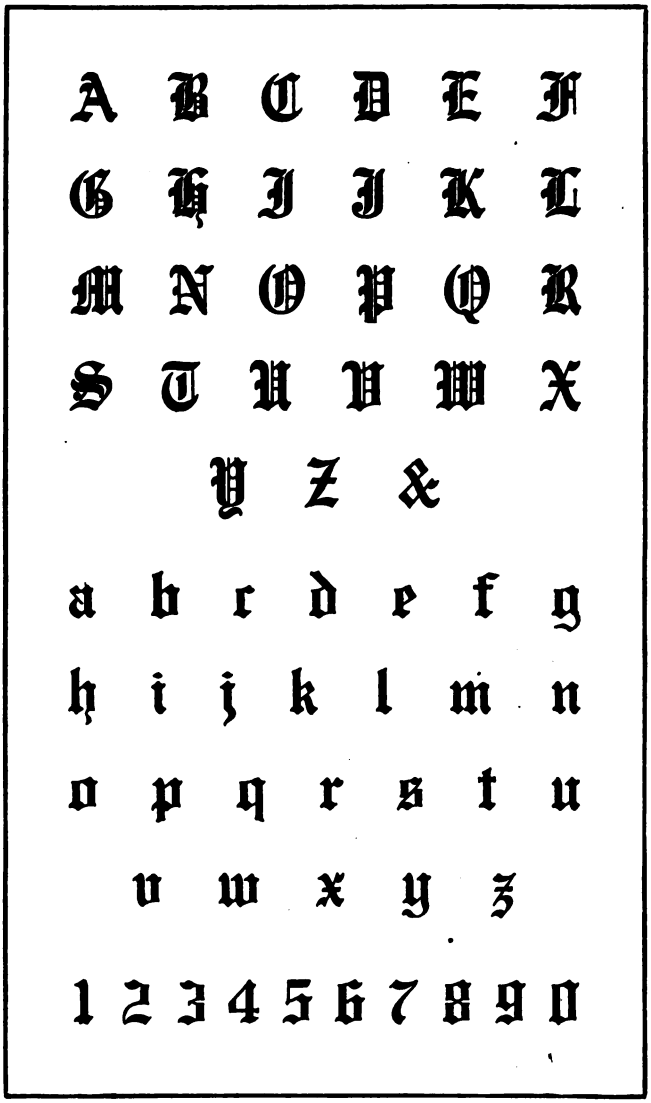

Fig. 173.—Engravers Old English Type.

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SUGGESTIONS

After finishing the letter plates in Chapters II, III, IV, and V, many students will feel that they have gone sufficiently far in the science of hand-lettering. If others desire to carry the work farther, some of the suggestions in this chapter will be found valuable. There is a growing demand for hand-lettered design in connection with the composed work, and it is well worth while to develop skill in this phase of the work.

Those who wish further instruction and information in this subject will do well to study Trezise's Letters and Letter Construction, The Inland Printer Company, Chicago.

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CHAPTER VII

Cost Finding Systems

The cost of the production of printed matter is ascertained, in most plants, by the operation of cost systems. These systems differ somewhat in detail, but in most of them the principles are practically the same. The principles underlying the individual systems have been evolved and perfected by printers thruout the country until they are now generally known as the standard cost system. Not only has this system been adopted by a great majority of printing establishments, but it has been endorsed by the federal trade commission as the most efficient of American industrial systems for ascertaining the true cost of production.

In order to obtain a general understanding of this standard cost system, we will tabulate the five principles on which it is based. They are, namely:

(1) That the unit of the production of the plant is the productive hour.

(2) That the hour cost in each department is the cost of the labor plus other expenses of operating the department, and its share of the general overhead expense.

(3) That the method of caring for expenses other than labor is to charge all items originating in any department, direct to that department, and to distribute business office expense over all departments on a basis of their relative size, and cost of maintenance.

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(4) That the paper stock and its handling are considered as a separate department, and the expense of operation, other than cutting stock for individual jobs, is often charged as an item of general expense.

(5) That the percentage of profit on each job is added to the true cost in each department, which cost is reckoned on the above principles, and the department totals are then combined to give the selling price of the entire job.

The printer sells just two things, which are labor (time) and merchandise (paper stock). The labor in each plant is a much larger item than the merchandise. The things sold, of course, must pay all the expenses of the business, and in addition, provide a legitimate profit. In the printing plant there is both productive and non-productive time. The productive time is the only time which can be sold. The hours that are sold must bring a price sufficiently high to cover the cost of non-productive hours, plus the departmental and overhead expenses. Since the hours actually sold must bring in revenue to cover all the expenses, the productive hour is the logical unit of production.

In the list of general, or overhead, expenses, that are distributed over all productive departments, are included all business-office expenses, sales and advertising, rent, taxes, insurance, and in fact, all expenses of operating the business that do not originate in any one department. It is important that this expense be apportioned to each department pro rata, as this distributes the cost of doing business thruout the departments in a fair manner, and charges the proper share against each productive hour.

In the matter of paper stock, the element of selling of merchandise is introduced. The transportation and handling of the stock must be

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charged for, and the investment in the stock must draw interest. There are numerous methods in force for operating this department. Generally, the expense of uncrating and handling stock is charged in the overhead expenses of the plant. Also, a percentage is added to the cost of the paper stock, to cover transportation and interest on the investment. The cutting of stock for the individual job is charged as productive, against the job.

The hour cost is worked out in individual plants by first finding the average cost of operation in each department for a normal period, and then dividing this cost into the number of productive hours for that period. Systematic records of the operation of the plants make it possible to know the accurate cost of productive hours in any department. (See Fig. 176.)

Different systems for recording the data of printing jobs are in use. In many cases, a job envelope is used, in which the copy for the job is enclosed, and on which the specifications are written. The specifications are made out when the order is received from the customer, and all necessary data is recorded on a cost sheet as the order is passed thru the successive mechanical operations. From the data on the envelope, and record shown on the cost sheet, the entire cost of the job is ascertained.

A typical job envelope and cost sheet for such a system is reproduced in Fig. 174. The method of pricing the job is shown on the cost sheet.

The Individual Job Record and the Monthly Statement of Cost of Production, as shown in Figs. 175 and 176, are forms from the Standard Cost System used and recommended by the United Typothetae of America. The latter form does not provide for record of cost of stock used in the various jobs for the month.

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Estimate No. 1602 Date 10/9, 1918 Folio Nº 25605

Name Ramsey Mfg. Co. Address

To be finished Wed. P.M. How deliver

Description 5M 4-page J'olders

Size 4x9 page Stock Super Enamel Book

1. Hand Comp.	2. Machine Comp.	3. Imposition, Lock.	4. Author's Alter.

JOB ORDER FOLLOW INSTRUCTIONS ON THIS JOB ENVELOPE, AND ENCLOSE THE COPY, O.K.ED PROOFS AND PRINTED COPIES **No. 25605**

Date Ordered 10/9/18 Promised Wed P.M.

Name Ramsey Mfg. Co.

Proof to McKnight, at office

QUANTITY AND DESCRIPTION

5,000 4-page J'olders

Stock ordered 10/9 from C.O.P. Co. Received

QUANTITY	SIZE	WEIGHT	
225 sh	25x38	80	Super Enamel Book

STOCK CUTTER WILL ADD THAT CORRECT AMOUNT OF STOCK USED IN ENTERED ABOVE

Body: Finished Size 12 x 9 FLAT Cut to 12 x 9 FOR PRESSWORK 16 to Sheet FINISHED SIZE

Cover: Finished Size x Cut to x to Sheet

Ink Not Specified (Black) Blue Red (Orange) Brown Green White Bronzed — Tint

Type Goudy Oldstyle Either Narrow Long Way of Sheet

Use Judgment Improve — Like Copy Like Sample — Heavy Display Light Display — Nice Job Cheap Job — Imprint Union Label

Cuts Ordered from Barnes-Crosby

Linotype

Press Instructions Work and Turn

No. Impressions 5M Press 12 x 18

Binding

Punch

Perforate

Number, beginning

Pad in pad Approximate Size Top Left Right Bottom

SIGN BELOW AS OPERATIONS ARE COMPLETED

FOLD UP	LOCKED UP	STOCK CUT	PLATES STEREO COMPLETED	CYLINDERS MADE READY COMPLETED	BINDERY WORK COMPLETED	PACKED	DELIVERED

Hold up Released

Under Press

Finishing

Trimming

Stitching, etc.

Numbering

1. Hand Composition	@		
2. Machine Composition	@		
3. Imposition Lock-up	@		
4 Author's Alterations	@		
6. Proof Reading, Proving	@		
34c.			
7 Pluten Presswork	@		
8 Cylinder Presswork	@		
9 Pressman's Time	@		
9a. Make-ready	@		
10. Feeding	@		
11 Wash-up	@		
12. Bronzing	@		
13 Slip-sheeting	@		
14. Changes	@		
lbs. Ink @			
34p.			
15. Stock Cutting	@		
16 Trimming	@		
17 Binding	@		
18. Folding	@		
19 Collat'g, Jog'g, Press'g	@		
20. Stitch, Sew, Perf.	@		
21 Pasting on Covers	@		
22. Padding	@		
23. Punching	@		
24. Numbering	@		
34b.			
Cuts			
Freight—Exp.—Postage			
Drayage—Packing			
Total			
General Expense %			
Total			
Profit %			
Total for Labor			
Stock			
Cover			
Plus 10% for handling			
Total for Stock			

Price charged

Fig. 174.

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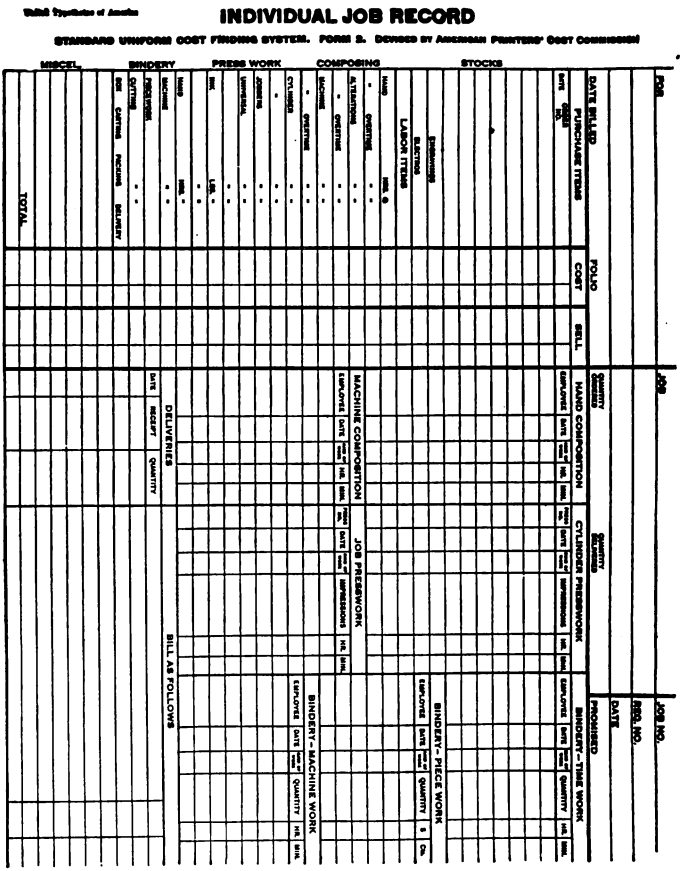

Fig. 175.

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N. B.--WHEN YOU CAN FILL OUT THIS SHEET PROPERLY YOU WILL KNOW THE COST OF PRODUCTION IN YOUR PLANT

United Typefoundries of America
Standard Cost Finding System, Form 9H—Small
Devised by American Printers' Cost Commission.

STATEMENT OF COST OF PRODUCTION FOR MONTH OF ..... 191.....

*Items Nos. 8, 11, 12, 13, 14, 19, 20, General Expense Column.

ITEM NO.	DEPARTMENT INVESTMENT (Amounts to be charged according to inventory or depletions or additions are made.)	$ Selling Expense	$ Stock Handling and Shipping	$ General Expense	$ Hand Composition	$ Machine Composition	$ Job Presses	$ Cylinder Presses	$ Bindery A Cutter	$ Bindery C Small Machines	$ Bindery D Girls hand work	Total Disbursements
1	Pay Roll											
2	Rent and Heat											
3	Light											
4	Power											
5	Insurance and Taxes											
6	Interest on Department Investment											
7	Depreciation											
☆ 8	Bad Debts											
9	Spelled Work											
10	Department Direct Expense											
☆ 11	Office Stationery and Postage											
☆ 12	Advertising											
☆ 13	Cartage and Car Fare											
☆ 14	Other Miscellaneous Expense											
15												
16												
17												
18												
☆ 19	Total Selling Expense.											
☆ 20	Total Stock Handling and Shipping											
21	Total General Expense											
22	Total Department Cost without General Expense											
23	Distribution of General Expense (Pro-rated on basis of Department COST)											
24	Total Cost of Departments											
25	Chargeable Hours of Each Department											
26	NET COST PER CHARGEABLE HOUR											
27	Average Net Cost per Hour for Months											
28	PERCENTAGE OF PRODUCTIVE TIME											

Fig. 176.

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GLOSSARY

Definitions and Technical Terms

Ad.—The abbreviation for advertisement; used very generally in printing and publishing.

Alignment—Type characters are in alignment when the top or bottom of the printing faces, or both, are in a direct line.

Aligned Out of Alignment

Agate—A name given to 5½ point type. Agate type is used in the classified ads of many periodicals. It is fourteen lines to an inch.

Ascender—That part of any letter which rises higher than the body of the lower case letters. The upper projecting elements of b, d, f, h, k, l and t are ascenders.

Bind—An article of composing material is said to bind when its size or position prevents a square, even lock-up in the chase.

Bleed—The pages of a book are said to be bled when they have been trimmed into the printed matter.

Body Matter—Type composed in straight paragraph form, without display lines, is known as body matter.

Body Type—Plain type used for the body matter of printed forms is known as body type.

Bourgeois—An early name given to type corresponding to 9 point.

Brevier—A name sometimes given to 8 point type. (Fig. 11.)

Caption—The heading of a chapter, a section or a page of a book.

Clean Proof—One which contains very few or no errors.

Composition—The art of setting types into the form and combination desired. (Fig. 27.)

Condensed—Type thinner than the regular proportion of lettering, is known as condensed. (Fig. 8.)

Copy—The written or printed text of the matter that is to be printed.

Cut—A type-high engraving by means of which a photograph, drawing or any manner of pictorial work may be reproduced in printing.

Dead—A type form is said to be dead when it has been printed and is ready for distribution.

Descender—That part of any letter which goes below the bottom of the body of the lower case letters. The letters g, j, p, q and y have descenders.

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Dirty Proof—One in which there are many errors.

Display Type—Type of heavier face, and more pronounced design, used for headlines and open display work, is called display type. (Fig. 7.)

Distribution—The practise of putting type and composing material back into the cases after having been composed, is called distribution. (Fig. 39.)

Draw Sheet—The top sheet of the tympan, on the platen of a platen press, or cylinder of a cylinder press.

Dummy—A general lay-out of a folder, booklet or book, used to give an idea of how the finished product will appear. A preliminary plan of an advertisement is also known as a dummy.

Electrotypes—Metal printing plates, cast in wax molds, made from type forms, cuts, or both. Electrotypes are direct reproduction or duplicates of original forms, and are designed to save wear on type and other material, or to permit a multiple of forms to be printed at the same time. They are usually made of an alloy of lead with a small per cent. of antimony and tin, coated with a very thin copper shell. For ordinary purposes, they are mounted on wood bases, made type-high.

Embossed—A printed design which has been raised, or impressed, above the surrounding surface of the paper by the impression of matched dies, is said to be embossed.

Engraving — A process of printing from steel and copper plates, which have been lettered or engraved, by hand. This is a distinct method of printing, necessitating special machinery and appliances. Many visiting cards are engraved.

Expanded — A type whose characters are designed thirty or forty per cent. wider than the standard proportion, is known as expanded.

Extended — A type whose characters are designed fifty or more per cent. wider than the standard proportion.

Font—A complete collection, or outfit, of one size and style of type, containing a proper apportionment of each character, according to the frequency of its use in printed matter.

Form—One or more pages of type which have been locked up in a chase ready for printing.

Founders' Mark—A small circular indentation on the side of a type, made by a part of the mold in which the type is cast. It is also called the pin-mark. (Fig. 6.)

Galley—A metal tray, usually of brass, used as a receptacle for type forms, after composition, while being made up, or preparatory to distribution.

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Hair Spaces—Very small spaces ,thinner than 6-em spaces, supplied with some fonts of type of larger sizes.

Half-tone—A printing plate produced by the photo-engraving process, having a screen-like printing surface which shows the different depths of tone of the copy, or original.

Hanging Indention—A paragraph or group of type in which the first line is set longer than the succeeding lines. The paragraphs of this section are set with hanging indentions. (Fig. 36.)

Imposition — The work of spacing out, arranging and placing in order and position, and locking of printing forms on an imposing stone.

Imprint—The name or trademark of a printer or publisher appearing on a piece of printed matter.

Justification—The even spacing out of lines of type in composition.

Kerned Letters—Letters in which a part of the face projects beyond the body. Some italic types are kerned, in order that the proper slant may be had without separating the letters too widely. In some fonts, also, the letters f and j are kerned.

Leaders—Type bodies cast in multiples of em lengths, the face of which will print a dotted or intermittent line. Leaders are used in programs, price-lists, indexes, and tabular matter.
Hyphen leader--------Here
Dot leader . . . . . Here

Letter-Spaced — Words in which spacing has been placed between the letters, is said to be letter-spaced.
Solid Letter-Spaced

Ligatures—Two letters conjoined and cast on one body.

ff fi fl ffi ffl ct st &
Ligatures.

Line Gauge—Printers' measuring stick or rule, graduated by nonpareils and picas. (Fig. 10.)

Make-ready—The science of equalizing and adjusting the impression of a form on the press until a satisfactory print is obtained.

Make-up—The assembling of component parts of composed matter into a complete form, or set of forms, such as paging matter for a book, or building up a tabular form.

Minion—The name given to 7 point type. Not a standard size.

Miters—Units of border material having a mitered end, in order to form a proper corner.

Specimens of Mitered Corners.

Modern-face—The style of roman lettering in which the general effect is that of roundness, precision and symmetry. As contrasted with old-style letters, modern-face has shorter heavy elements, longer light elements, and longer and lighter serifs. (Fig. 9.)

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Offset—A freshly printed sheet is said to offset when its print leaves a mark on other sheets.

Old-Style—The style of roman lettering in which the general effect is that of angularity, and in which smoothness in curves and gracefully tapering lines is not attempted. In old-style letters the light elements are short and relatively heavy, the heavy elements long, and the serifs short, angular and stubby. It is more legible in paragraph form than is the modern face. (Fig. 9.)

Points — The punctuation marks o a font of type— . , ; : ! ' — are frequently designated as points. In the printers' measure, the term point denotes one seventy-second of an inch.

Proof—An impression made of a printing form, for the purpose of correcting or inspection before the form is printed.

Pi—A type form, or part of a form, that has become mixed up. Any confused mass of composing material is called pi.

Pica—The name for 12 point type. In the printers' measure it is approximately one-sixth of an inch; also 12 points. (Fig. 11.)

Quoins — Small triangular metal wedges, less than type-high, used in pairs, to tighten or lock up a printing form in a chase.

Register—A form in the press is said to register when it prints exactly in the proper position on the sheet. When two forms are printed on the same sheet, as in color work, the second must be made to register with the first.

Reglet—Strips of wood, in pica and nonpariel thicknesses, less than type-high, used in the locking of forms in chases.

Retouching—The process of correcting or improving photographic prints for half-tone purposes, in order that the finished cut will print as desired.

Running-Head—The title or other wording that appears at the head of each page of a book or catalog, etc.

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Specimen of Running Head.

Rout—When it is desired to remove portions of the printing face of a cut, the cut is placed in a machine with a routing attachment, and the portions are ground down below type-high, or routed off.

Scored—A cardboard or cover is scored when it has received a heavy impression from rule, without ink. It is often necessary to score cards or stiff cover papers, to obtain a neat fold without breaking the stock.

Script — Type fashioned in imitation of handwriting; slanted and heavily kerned. Almost out of use today.

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Series—A collection of fonts of all the sizes of one style of type is known as a type series. One or more fonts each of New Caslon type, from 6 point to 48, or larger, would be known as the New Caslon series of type.

Serif—The short cross-line put as a finish to the ends of the unconnected elements of letters. Its form varies with the style of lettering. (Fig. 6.)

Shoulder—The shoulder of a type or cut is that portion of the upper surface, outside of the printing face, which is less than type-high. (Fig. 6.)

Slip Sheeting—When printing on papers that offset easily, it is sometimes necessary to insert a sheet of cheap paper between the printed sheets as they come from the press. This process is called slip sheeting.

Sorts—Type characters not supplied in regular fonts, which must be prepared specially by type founders.

Stereotypes — Printing plates made by pouring molten type metal into molds, into which matrices of the desired forms are placed. Stereotypes are cheaper than electrotypes, but do not wear as long, or print as well.

Stock—Term usually applied to the paper used for printing.

Swash Letters — Old-style Italic letters, embellished with additional flourishes. When swash characters are used, these flourishes should extend only from the ends of the words.

A D M N R

Swash letters.

Thin Spaces — Spaces made in one point (brass) and one-half point (copper) thicknesses, for use in narrow measure composition, tabular work, or for correction of justification in locking up. They should not be used in ordinary composition.

Tympan—The "packing" including paper, pressboard, tagboard and the upper draw-sheet, that is placed on the platen of the press against which the impression is made.

Vignette—A Vignette cut is a half-tone in which the edges fade away with no definite outlines. (Fig. 5 is a combination vignetted and outlined cut.)

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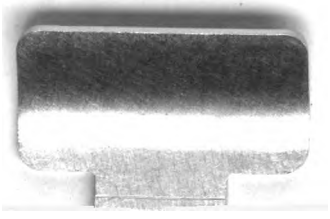

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